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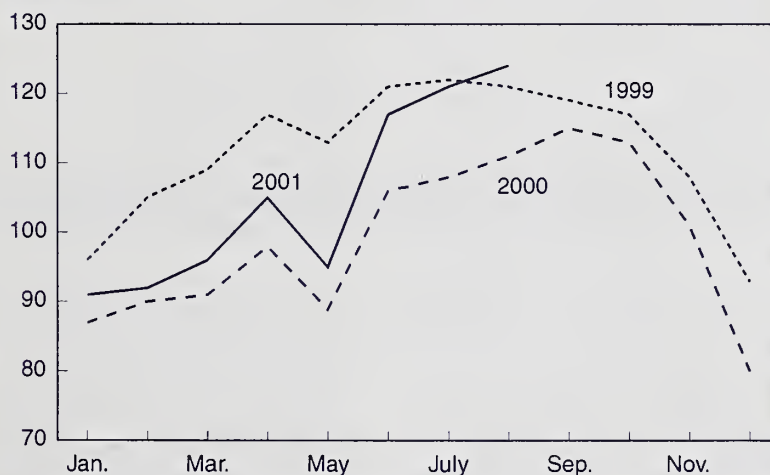
FTS-292
September 2001

Fruit and Tree Nuts

Situation and Outlook Report

Index of prices received by growers in 2001 for fruit
and nuts higher than a year ago

1990-92=100



Source: National Agricultural Statistics Service, USDA.

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The *Fruit and Tree Nuts Situation and Outlook* is being replaced by a bi-monthly electronic newsletter titled *Fruit and Tree Nuts Outlook*. The first issue will be released on September 24, 2001. The Outlook will continue to be supplemented by a Yearbook (October).

Approved by the World Agricultural Outlook Board.
Summary released September 6, 2001. The summary of the next *Fruit and Tree Nuts Situation and Outlook* is scheduled for release on October 17, 2001. Summaries and full text of Situation and Outlook reports may be accessed electronically via the ERS website at www.ers.usda.gov.

The *Fruit and Tree Nuts Situation and Outlook* is published two times a year and supplemented by a yearbook. To order, call 1-800-999-6779 in the United States or Canada. Other areas please call (703) 605-6220. Or write ERS-NASS, 5285 Port Royal Road, Springfield, VA 22161.

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Summary

Grower prices for many fruit crops averaged higher than a year ago this summer due to decreased production. Included here are grapes, peaches, strawberries, fresh oranges, and fresh grapefruit. Reduced acreage on some crops and weather-related problems, including hailstorms, freezing temperatures, and below-average rainfall, all contributed to lower production in 2001. The grower price index for fruit and nuts in July and August 2001 averaged 12 percent above the July-August 2000 index. Grower prices are likely to remain above a year ago through most of the second half of the year as the anticipated smaller crops of apples and pears this fall could lead to higher prices. Meanwhile, grower prices for most tree nuts will likely average lower in 2001/02 as larger crops are expected for most of the major crops.

Decreased supplies mean consumers will pay higher prices for most fresh fruit throughout the second half of 2001. Higher retail prices for grapefruit, lemons, bananas, peaches, strawberries, and Thompson seedless grapes boosted the consumer price index for fresh fruit in July 2001 compared with a year ago. Following the trend in grower prices, higher retail prices are expected for apples and pears during the fall.

The 2001 U.S. apple crop is forecast to be down 10 percent from a year ago and the smallest crop since 1988. Production is down in both the Western and Eastern regions, offsetting increased production in the Central region. Due to the smaller crop, apple prices in 2001/02 will likely average higher than in 2000/01. Less competition from a smaller pear crop this fall will also help boost apple prices. Reduced supplies and higher prices will limit both domestic and export demand for U.S. apples, especially in the fresh-market sector. Domestic consumption of fresh apples is expected to decline 5 percent from last year's estimate of 17.9 pounds per person.

U.S. grape production for 2001 is forecast to decline 15 percent from last year's record high crop of 15.3 billion pounds. Although smaller, this year's grape crop, if realized, will be 11 percent and 4 percent larger than in 1998 and 1999. California's production is expected to decline 16 percent, and output is expected lower in most other grape-producing States. Reduced production and less competition from smaller crops of stone fruit and citrus point to higher grape prices this summer. A combination of lower production and higher prices will likely decrease domestic consumption of fresh grapes by 4 percent from the 7.5 pounds per person estimated in 2000. Meanwhile, the good quality of this year's crop and continued strong international demand has kept U.S. exports of fresh grapes higher thus far this season.

U.S. pear production for 2001 is forecast down 5 percent from 2000. The size of the Bartlett crop is 9 percent smaller,

and the combined production of other U.S. pear varieties is forecast down 1 percent. The overall decline in production this year, combined with the depletion of carry-in stocks, will help boost grower prices during the 2001/02 marketing season. In the fresh-market sector, lower supplies and higher prices will likely lead to more imports, fewer exports, and a decline in domestic consumption from the 3.3 pounds per person estimated for 2000.

Harvest of stone fruit crops is expected smaller in 2001 than a year ago, except for sweet and tart cherries. Peaches account for a large proportion of total stone fruit production in the United States. Partly due to reduced supplies, grower and retail prices for fresh peaches have held strong. These higher prices, along with reduced supplies, will likely keep domestic consumption of fresh peaches (including nectarines) in 2001 below last year's 5.6 pounds per person. Reduced supplies of apricots and California plums are also expected to lead to higher prices and decreased domestic consumption in 2001. The larger sweet cherry crop, meanwhile, will likely increase domestic cherry consumption about 4 percent from last year's estimate of 0.61 pound per person.

Commercial strawberry production in five major producing States (CA, FL, OR, MI, and NJ) is forecast down 8 percent from a year ago. Production is expected lower in these States except New Jersey. The smaller crop has kept monthly grower prices for fresh-market strawberries higher than last year. Decreased supplies and higher prices will likely limit this year's prospects for U.S. fresh strawberry exports and lead to a decline in domestic fresh strawberry consumption from the 2000 estimate of 4.80 pounds per person.

Based on preliminary crop indications reported by the North American Blueberry Council (NABC), the 2001 U.S. cultivated blueberry crop is estimated to be down 5 percent from a year ago. The smaller overall crop reflects reduced production in all major blueberry-producing States except New Jersey and Washington. NABC estimated there were fewer blueberries for both the fresh-market and processing sectors this year. Due to lower supplies, grower prices for fresh-market blueberries are likely to average higher, but large carry-in stocks will likely put downward pressure on processing blueberry prices.

U.S. cranberry production is expected to decline 1 percent in 2001 from a year earlier. Production declines are expected in most major producing States, except in Wisconsin. As most of these States had average to good growing conditions, much of the decline in production may be attributed to a federal marketing order that will restrict the amount of cranberries that may be marketed during the 2001/02 season. While the crop is expected smaller, carry-in inventories are still expected to

remain large, though down from a year ago, limiting any improvement in grower prices during the 2001/02 season.

Demand for fresh tropical fruit in the United States has been on the rise—a trend influenced mainly by the Nation's growing immigrant population. Because areas with tropical climate are limited in the United States, imports constitute the bulk of the U.S. tropical fruit market, with bananas accounting for over 85 percent of the total import volume. Imports were down in 2000 for bananas, canned pineapple, and pineapple juice, lowering domestic per capita consumption for these commodities. Meanwhile, greater imports of fresh and frozen pineapple, mangos, and papayas led to increased per capita consumption.

The 2000/01 citrus crop is projected to be 6 percent smaller than the previous season, with reduced-sized crops for all citrus fruit except lemons. Despite the smaller crop, sluggish demand brought lower prices to growers for grapefruit, processing oranges, and lemons. Drought conditions in Florida, the major citrus-producing State, reduced its citrus production 6 percent. Growers also were removing grapefruit trees from production due to low prices from poor demand in recent years, further decreasing the total citrus crop size. The size of California's citrus crop fell 9 percent due to lighter fruit set on orange and grapefruit trees than last season. Arizona's citrus crop fell marginally while in Texas the citrus crop was larger.

The 2000/01 U.S. orange crop is expected to decrease 5 percent from the previous year, but is the fourth largest on record. Production declined in all States, except Texas. The good quality and large size of this season's fresh oranges from California helped drive up exports 21 percent from last season. As a result of the smaller crop and higher exports, consumption of fresh oranges this season is projected to decline to 1.5 million tons, 14 percent below last season and the second lowest in 10 years.

Orange juice production in 2000/01 is forecast to decrease 7 percent from the previous season, but the third highest in

history. Juice yields were higher than a season ago—frozen concentrated orange juice (FCOJ) yield was up 2 percent and not-from-concentrate (NFC) orange juice yield was up 5 percent. Despite reduced production and imports, supply estimates only dropped 4 percent due to record-high juice stocks at the beginning of this season. Because of continued large supplies, grower prices for processing oranges were down 19 percent from the previous season. Strong demand for NFC orange juice limited the decline in domestic consumption to less than 1 percent, to 5.83 gallons per capita.

The U.S. grapefruit crop is forecast to decline 10 percent in 2000/01 from a year earlier, the lowest quantity since 1991/92. The smaller crop is largely attributed to fewer trees and small fruit in Florida, and light fruit set in California. Florida's crop fell 14 percent from last season and accounted for 79 percent of this year's total production, a smaller share than in past seasons. Florida grower prices fell 52 percent this season due to lower prices for processing grapefruit. Consumers faced fractionally higher retail prices for fresh grapefruit this season compared with last season. With the smaller crop and higher retail prices, fresh grapefruit consumption is projected to decline 33 percent from last season's estimate of 5.19 pounds per person, declining for the third consecutive season.

The total tree nut crop is expected to increase in 2001 after declining 15 percent in 2000 from the previous year. Indications for a larger crop are based on the alternate bearing nature of nut trees. This year should be an "on year" for most of the major crops, almonds, walnuts, hazelnuts, pecans, and macadamia nuts. Only the pistachio trees will be on an "off cycle." Accounting for more than half of the total tree nut output, the California Agricultural Statistics Service forecast almond production to be at a record high in 2001, up 21 percent from a year ago. Although grower prices are expected to decline as a result of the expected large crops, grower revenues should be higher this year as increases in production will more than likely offset the declines in prices.

Fruit Price Outlook

Smaller Crops Point to Higher Prices During the Second Half of 2001

Grower prices for many fruit crops averaged higher than a year ago this summer due to decreased production. Included here are grapes, peaches, strawberries, fresh oranges, and fresh grapefruit. Reduced acreage on some crops and weather-related problems, including hail storms, freezing temperatures, and below-average rainfall, all contributed to lower production in 2001. The grower price index for fruit and nuts in July and August 2001 averaged 12 percent above the July-August 2000 index (table 1). Grapes, oranges, and apples carry the most weight in the calculation of the index. Other fruit (and nuts) used in the calculation of the index include grapefruit, lemons, peaches, pears, strawberries, and almonds. The stronger July-August index was attributed to higher grower prices for grapes, pears, peaches, strawberries, fresh oranges, and fresh grapefruit.

While the larger 2000 fall pear crop resulted in lower fresh pear prices through most of the 2000/01 season, seasonal supply decreases and smaller crops of summer fruit such as peaches, strawberries, and most citrus boosted end-of-season prices. By the end of April, stocks of pears in cold storage were 48 percent lower than the same time last year, and as of May 31, stocks were fully depleted. Pear prices from May through August averaged 97 percent higher than the same period a year ago. Higher fresh orange prices are a result of the smaller fresh-market crop, as well as strong demand both in the domestic and international markets for large-sized, good-quality fruit. Despite the smaller 2001 grapefruit crop, lackluster demand held grapefruit prices (fresh and processed) below a year ago through most of the 2000/01 season. Fresh grapefruit prices, however, gained strength since May and averaged higher than the same period from May through August. Besides the smaller grapefruit crop,

seasonal decreases in supplies (particularly in Florida) and less competition as a result of lower production of many summer noncitrus fruit probably pressured fresh grapefruit prices higher during those months. Offsetting some of the upward pressure on fruit prices in July and August were lower prices for apples as stocks remained above the July 2000 level. With the larger harvest in the fall of 2000, apple prices averaged lower through much of the 2000/01 season. Grower prices are likely to remain above a year ago through most of the second half of the year as the anticipated smaller crops of apples and pears this fall could lead to higher prices. Meanwhile, grower prices for most tree nuts will likely average lower in 2001/02 as larger crops are expected for most of the major crops. Based on the alternate bearing nature of nut trees, 2001 should be an "on year" for the major crops grown in the United States, except for the pistachio crop.

Decreased supplies mean consumers will pay higher prices for most fresh fruit throughout the second half of 2001. In July, the Consumer Price Index (CPI) for fresh fruit averaged 6 percent higher than the same period a year earlier (table 2). The higher CPI compared with a year ago reflects higher retail prices for grapefruit, lemons, bananas, peaches, strawberries, and Thompson seedless grapes (table 3). Higher prices for bananas reflect not only fewer imports but also less competition from lower supplies of other summer fruit. Although supplies were below a year ago, banana prices averaged lower during the first half of 2001, perhaps due to large supplies of apples and pears from last year's harvest that have pushed retail prices for these commodities lower. Seasonal increases in supply during the summer point to a downward movement in retail prices, forcing the August CPI to drop from the July CPI. Following the trend in grower prices, higher retail prices are expected for Red Delicious apples and Anjou pears during the fall.

Table 1--Index of prices received by growers for fruit and nuts, 1997-2001

Month	1997	1998	1999	2000	2001
1990-92=100					
Jan.	98	86	96	87	91
Feb.	96	98	105	90	92
Mar.	108	102	109	91	96
Apr.	86	105	117	98	105
May	104	112	113	89	95
June	128	116	121	106	117
July	123	127	122	108	121
Aug.	122	135	121	111	124
Sep.	130	130	119	115	
Oct.	121	129	117	113	
Nov.	110	117	108	101	
Dec.	97	98	93	80	
Annual	110	113	117	103	

Source: National Agricultural Statistics Service, USDA.

Table 2--U.S. consumer price indexes for fresh fruit, 1997-2001

Month	1997	1998	1999	2000	2001
1982-84=100					
Jan.	239.1	240.2	267.4	266.6	261.8
Feb.	231.5	240.3	257.8	263.0	253.5
Mar.	234.6	235.9	257.4	257.9	257.3
Apr.	235.8	241.6	271.9	257.0	269.4
May	239.4	249.0	280.6	257.3	274.0
June	228.5	247.3	273.4	244.6	268.3
July	229.9	247.4	264.9	248.9	263.8
Aug.	237.0	248.7	266.2	252.2	
Sep.	243.9	247.6	265.8	258.2	
Oct.	242.6	251.8	262.3	262.6	
Nov.	233.9	249.6	260.5	262.8	
Dec.	239.4	258.7	266.9	269.0	
Annual avg.	236.3	246.5	266.3	258.3	

Source: Bureau of Labor Statistics, U.S. Department of Labor.

Table 3--U.S. monthly retail prices for selected fruits and juice, 1998-2001

Month	Valencia oranges				Navel oranges				Orange juice, concentrate 1/				Grapefruit			
	1998	1999	2000	2001	1998	1999	2000	2001	1998	1999	2000	2001	1998	1999	2000	2001
	-- Dollars per pound --				-- Dollars per pound --				--Dollars per 16 fl. oz--				-- Dollars per pound --			
Jan.	--	--	--	--	0.525	0.830	0.607	0.638	1.601	1.753	1.823	1.863	0.499	0.543	0.567	0.563
Feb.	--	--	--	--	.507	.889	.586	.660	1.568	1.780	1.811	1.909	.481	.545	.572	.583
Mar.	--	--	--	--	.505	.869	.572	.646	1.587	1.741	1.807	1.808	.503	.546	.556	.571
Apr.	--	--	--	--	.571	.944	.573	.735	1.634	1.779	1.819	1.872	.510	.556	.551	.593
May	--	0.865	--	--	.672	--	.638	.793	1.589	1.764	1.802	1.886	.491	.606	.585	.616
June	0.664	.942	--	--	--	--	.699	--	1.633	1.758	1.800	1.926	.587	.712	.603	.654
July	.683	.959	0.666	0.608	--	--	--	--	1.655	1.813	1.875	1.937	.695	.778	.633	.719
Aug.	.679	.989	.639	--	--	--	--	--	1.668	1.825	1.882	--	.738	.803	0.672	--
Sep.	.650	.974	.574	--	--	--	--	--	1.599	1.825	1.837	--	.750	.762	0.704	--
Oct.	.643	.955	.559	--	--	--	--	--	1.655	1.784	1.863	--	.767	.710	0.706	--
Nov.	.621	--	--	--	--	.884	--	--	1.654	1.841	1.884	--	.618	.631	0.592	--
Dec.	--	--	--	--	.608	.641	--	--	1.679	1.822	1.878	--	.548	.582	0.581	--

	Lemons				Red Delicious apples				Bananas				Peaches			
	1998	1999	2000	2001	1998	1999	2000	2001	1998	1999	2000	2001	1998	1999	2000	2001
	-- Dollars per pound --				-- Dollars per pound --				-- Dollars per pound --				-- Dollars per pound --			
Jan.	1.026	1.402	1.436	1.082	0.922	0.860	0.952	0.808	0.473	0.489	0.490	0.500	--	--	--	--
Feb.	.976	1.274	1.416	1.138	.960	.870	.974	.830	.489	.509	.528	.496	1.894	1.856	1.773	1.774
Mar.	.959	1.167	1.338	1.081	.962	.852	.960	.845	.475	.506	.517	.510	--	1.941	--	--
Apr.	.946	1.188	1.298	1.162	.949	.870	.957	.834	.511	.482	.510	.492	--	--	--	--
May	1.027	1.159	1.200	1.176	.974	.881	.927	.848	.510	.492	.509	.509	--	--	--	--
June	1.059	1.183	1.195	1.261	.955	.893	.918	.890	.507	.502	.506	.506	1.425	1.413	1.211	1.752
July	1.262	1.282	1.253	1.319	1.000	.905	.940	.892	.530	.494	.512	.523	1.179	1.160	1.143	1.350
Aug.	1.405	1.397	1.375	--	.990	.921	.928	--	.489	.490	.490	--	1.065	1.098	1.282	--
Sep.	1.428	1.463	1.357	--	.971	.972	.922	--	.476	.481	.488	--	1.221	1.100	--	--
Oct.	1.462	1.535	1.321	--	.902	.919	.899	--	.470	.471	.496	--	--	--	--	--
Nov.	1.453	1.538	1.173	--	.878	.902	.833	--	.487	.480	.479	--	--	--	--	--
Dec.	1.372	1.414	1.111	--	.854	.918	.816	--	.510	.494	.487	--	--	--	--	--

	Anjou pears				Strawberries 2/				Thompson seedless grapes				Wine 3/			
	1998	1999	2000	2001	1998	1999	2000	2001	1998	1999	2000	2001	1998	1999	2000	2001
	-- Dollars per pound --				-- Dollars per 12-oz pint --				-- Dollars per pound --				-- Dollars per liter --			
Jan.	0.863	0.923	1.017	0.945	2.135	--	2.167	--	1.815	2.341	2.450	2.126	5.302	5.287	5.458	5.630
Feb.	.931	.925	1.011	.950	2.080	2.102	1.935	2.140	1.722	1.663	1.872	1.647	4.790	5.103	5.256	5.400
Mar.	.878	.942	1.003	.950	1.751	1.960	1.825	2.010	1.579	1.613	1.663	1.616	5.306	5.262	5.471	5.594
Apr.	.918	.953	1.015	.914	1.613	1.751	1.450	1.737	1.516	2.262	1.746	2.209	4.764	5.129	5.156	5.479
May	.962	.960	.999	.978	1.386	1.419	1.218	1.482	--	--	1.872	--	5.322	5.302	5.530	6.153
June	.996	.913	.871	1.039	1.413	1.490	1.187	1.465	1.651	1.864	1.359	2.081	4.808	5.093	5.273	6.452
July	--	--	--	--	1.346	1.375	1.246	1.486	1.256	1.678	1.358	1.579	5.319	5.384	5.547	5.955
Aug.	--	--	--	--	1.454	1.557	1.263	--	1.448	1.522	1.283	--	4.801	5.141	5.290	--
Sep.	--	--	--	--	1.469	1.679	1.416	--	1.393	1.453	1.329	--	5.370	5.385	5.573	--
Oct.	--	--	--	--	1.779	1.664	1.619	--	1.564	1.557	1.59	--	4.823	5.166	5.400	--
Nov.	--	--	--	--	--	1.948	--	--	1.941	1.897	2.062	--	5.274	5.452	5.539	--
Dec.	.983	1.034	--	--	--	--	--	--	--	2.403	2.359	--	4.978	5.171	5.412	--

-- = Insufficient marketing to establish price.

1/ Data converted from 12 fluid ounce containers.

2/ Dry pint.

3/ Data series began August 1995.

Source: Bureau of Labor Statistics, U.S. Department of Labor.

Noncitrus Fruit Outlook

U.S. Apple Crop Expected Smaller in 2001, Prices Likely To Be Higher

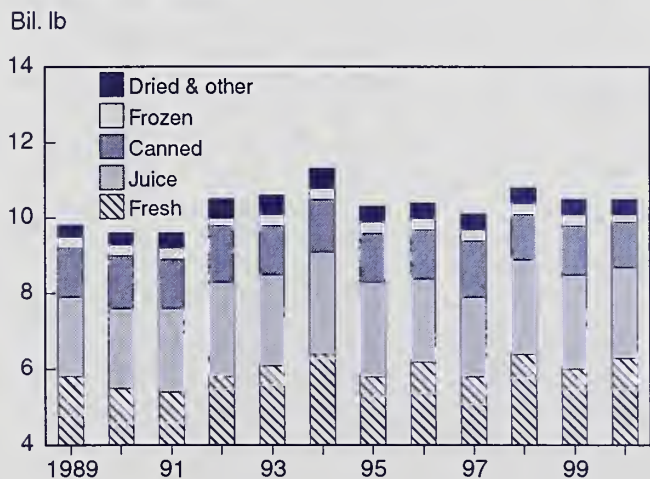
The U.S. Department of Agriculture's (USDA) forecast for 2001 U.S. apple production was 9.6 billion pounds, down 10 percent from a year ago (table 4) and the smallest crop since 1988. Production is down in both the Western (down 16 percent) and Eastern (down 3 percent) regions, offsetting increased production in the Central region (up 12 percent). Because of the smaller crop this year, apple prices in 2001/02 will likely increase from price levels of 2000/01. Less competition from a smaller pear crop this fall will also help boost apple prices. Reduced supplies and higher prices will limit both domestic and export demand for U.S. apples, especially in the fresh-market sector. Domestic consumption of fresh apples is expected to decline from last year's estimate of 17.9 pounds per person.

With the exception of California, all western apple-producing States are expected to harvest smaller crops of apples this fall with the region producing a total of 5.9 billion pounds. Production in Washington is expected to reach 4.9 billion pounds, down 17 percent from 2000. Washington produces over half the Nation's apples and is the largest producer for both the fresh and processing markets. Besides being in its "off" production year (Washington produced a near-record large crop in 2000), other weather-related issues and a drop in bearing acres have also contributed to the anticipated smaller crop this fall. In addition to the stress on the trees resulting from below-average rainfall during the spring, combined heavy winds and hail from a storm in June caused severe damage to orchards in the State's Yakima Valley. Unfavorable weather during bloom and hail also

reduced production in the State's Wenatchee area. In California, the second largest apple-producing State in the region, weather was generally favorable and was conducive for increased production. Meanwhile, decreased production in other Western States could be partly attributed to crop damage caused by hail, early-season frost, and late-season drought. Almost similar weather problems affected apple production in many Eastern States, while generally favorable weather improved crop performance of apple crops in most Central States, except in Ohio.

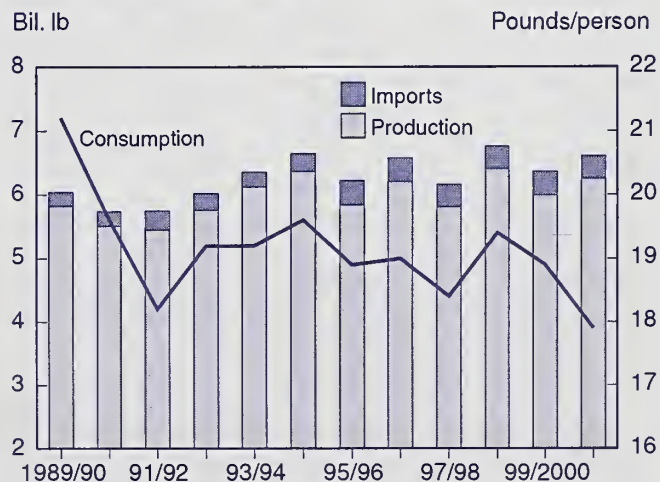
As of July 1, 2001, U.S. apple holdings, as reported by the U.S. Apple Association, totaled 21.3 million bushels, up 9 percent from this time last year and 26 percent higher than the 5-year average. Fresh apple holdings (mostly in controlled atmosphere storage) were up 16 percent, while total processing holdings were 8 percent less. Although fresh-market stocks from the 2000 fall apple crop are still quite large, the diversion of some of these stocks to the processing sector as part of the Washington Apple Commission's one-time effort to reduce inventory of Washington apples as the industry heads into the new season and the expected smaller crop in that State, will help ease any fresh-market supply pressure during the 2001/02 season. Fresh-market supplies in 2001 are anticipated to be below last year, likely resulting in higher prices, increased fresh apple imports, and reduced fresh apple exports. During 2000, fresh-market supplies were up 4 percent from the previous year, and the season-average price growers received for fresh-market apples declined 16 percent, to 17.9 cents per pound. Retail prices for Red Delicious apples mirrored the pattern in grower

Figure 1
U.S. apple utilization



Source: National Agricultural Statistics Service, USDA.

Figure 2
U.S. fresh apple supply and consumption



2000/01 preliminary.

Sources: National Agricultural Statistics Service and Economic Research Service, USDA.

Table 4--Apples: Total production and season-average price received by growers, 1998-2000, and indicated 2001 production 1/

States	Production				Price		
	1998	1999	2000	2001	1998	1999	2000
--- Million pounds ---							
Eastern States:							
Connecticut	18	23	21	18	33.5	27.6	30.2
Georgia	11	12	14	9	16.1	17.4	18.8
Maine	45	72	39	43	21.8	20.2	21.8
Maryland	35	38	34	40	17.8	9.4	13.7
Massachusetts	32	65	50	45	30.7	26.8	32.0
New Hampshire	19	44	34	26	27.9	21.5	23.6
New Jersey	55	50	50	55	12.2	12.8	13.4
New York	1,070	1,260	995	1,050	11.4	11.4	11.7
North Carolina	185	190	190	100	11.1	15.1	12.6
Pennsylvania	395	505	475	445	13.9	10.9	11.4
Rhode Island	3	4	2	1	30.4	37.2	35.9
South Carolina	45	32	20	6	19.7	13.7	12.9
Vermont	35	57	42	36	21.7	20.5	22.5
Virginia	280	360	350	340	11.7	10.9	9.8
West Virginia	110	140	90	115	9.0	9.3	9.2
Total	2,336	2,851	2,405	2,329			
Central States:							
Arkansas	5	5	7	9	22.7	23.8	25.2
Illinois	45	59	42	57	18.6	21.4	28.7
Indiana	54	60	45	53	24.2	23.4	24.5
Iowa	9	11	8	8	28.6	31.9	32.1
Kansas	2	7	3	5	25.6	27.7	26.8
Kentucky	11	9	7	8	28.4	29.3	25.5
Michigan	1,000	1,200	850	970	8.7	8.8	9.0
Minnesota	24	23	22	22	44.4	41.4	42.8
Missouri	34	49	38	41	17.2	17.5	17.5
Ohio	80	100	103	102	20.5	21.9	22.5
Tennessee	13	10	10	10	22.2	21.1	24.4
Wisconsin	76	77	71	71	27.8	28.1	28.0
Total	1,351	1,610	1,205	1,355			
Western States:							
Arizona	46	34	95	17	14.7	12.7	7.4
California	860	896	650	696	15.3	15.8	15.0
Colorado	65	8	30	26	11.9	21.8	13.9
Idaho	155	70	140	120	8.5	17.1	10.7
New Mexico	8	2	8	2/	21.0	25.0	25.4
Oregon	180	150	167	150	14.1	10.9	10.2
Utah	45	9	49	23	14.5	21.9	11.8
Washington	6,600	5,000	5,900	4,900	11.5	17.1	12.9
Total	7,959	6,169	7,039	5,932			
United States	11,646	10,631	10,649	9,615	12.2	15.0	12.9

1/ Commercial production from orchards of at least 100 bearing-age trees. 2/ End of season estimate only.

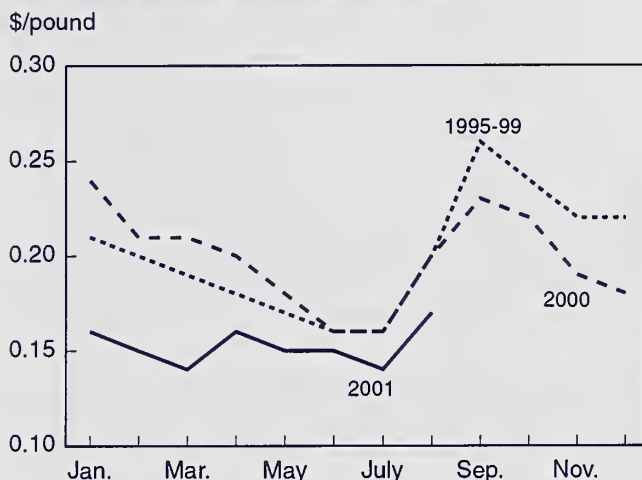
Source: National Agricultural Statistics Service, USDA.

prices during 2000/01 and averaged 66.1 cents per pound (August-July), down 30 percent from the previous season.

U.S. production of apples for the processing sector in 2001 will also likely be limited. Many Eastern States, where a large proportion of production is for processing, are expected to harvest smaller crops. In addition, although combined production in the Central and Eastern States are expected up 2 percent from a year ago, the much smaller crop in Washington will likely bring overall production of processing apples down from last year. Washington accounts for over one-third of processing apple production. Reduced production and lower stocks of processing apples will help improve grower prices. However, stocks of 2000 fresh-market apples being diverted to the processing sector will likely mitigate some of the upward pressure on prices. During 2000, production of processing apples was down from a year ago but large carryover stocks from the 1999/2000 season, along with increased imports of apple juice and cider, contributed to lower grower prices. The 2000/01 season-average grower price for processing apples averaged \$103 per ton, down 20 percent from the previous season.

Increased production in the fall of 2000 reduced imports of fresh apples during the 2000/01 season. U.S. imports from August 2000 through June 2001 totaled 301.5 million pounds, down 5 percent from the same period a year ago. About 94 percent of this volume came from the United States' three largest suppliers of fresh-market apples. Of these top suppliers, imports were down from Canada (19 percent) and New Zealand (11 percent) but were up from Chile (23 percent). During the same period, exports of fresh apples increased 44 percent to 1.6 billion pounds. Exports

Figure 3
U.S. grower prices for fresh apples

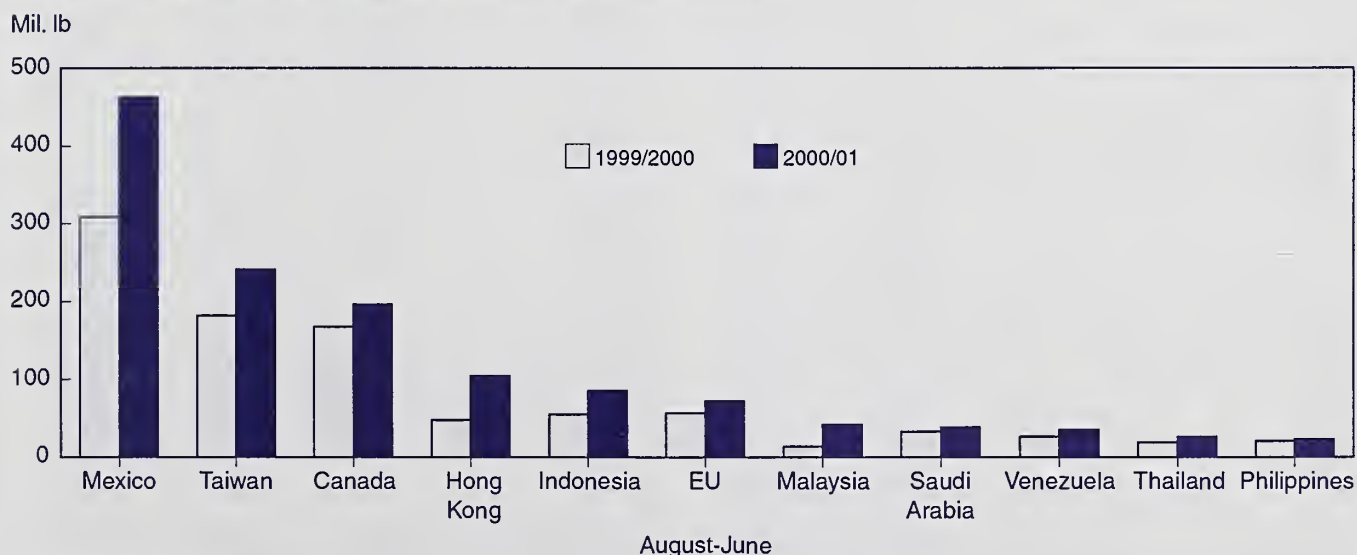


Source: National Agricultural Statistics Service, USDA.

were up to all major markets, including Mexico, Taiwan, Canada, Hong Kong, Indonesia, and the United Kingdom.

U.S. imports of apple juice and cider from August 2000 through June 2001 totaled 286.1 million gallons, up 2 percent from the same period a year earlier. Although smaller volumes were shipped from large suppliers such as Argentina and Chile, imports were up sharply from China, Italy, Germany, Hungary, and New Zealand. During the same period, U.S. apple juice exports declined. At nearly 7.0 million gallons, exports were down 21 percent, reflecting reduced shipments to Japan and Canada, the two leading markets.

Figure 4
U.S. shipments for fresh apples to important export markets



Source: Bureau of the Census.

U.S. Grape Production Lower in 2001

U.S. grape production for 2001 is forecast to decline 15 percent from a year ago, to 13.0 billion pounds (table 5). While production is expected to be down from last year's record-large crop, this year's grape crop, if realized, will be 11 percent and 4 percent larger than in 1998 and 1999.

California's production is expected to decline 16 percent from the record 14.1 billion pounds harvested last year. Reduced production is also expected in most other grape-producing States, except in Washington and Oregon where the grape crops are forecast 11 percent and 24 percent larger and in Arkansas where output is expected unchanged.

Grape production in California during 2001 is expected to consist of the following: 52 percent wine varieties, 34 percent raisin varieties, and 14 percent table varieties. Production of table varieties is expected to be up 3 percent from a year ago while those of wine and raisin varieties are expected to be down 8 percent and 31 percent, respectively.

The California Agricultural Statistics Service estimated the State's total grape acreage in 2000 at 955,000 acres, up 2 percent from the previous year. Total bearing acres rose 5 percent

to 827,000 acres, but non-bearing acres declined 15 percent to 128,000 acres. Bearing acres rose for all variety types while non-bearing acres declined for table varieties (down 15 percent) and wine varieties (down 15 percent). Non-bearing acreage for raisin varieties was unchanged. Acreage devoted to wine-type grape production accounted for 59 percent of total grape acres, of which bearing acreage increased 8 percent (the largest increase among variety types) to 458,000 acres. Increases in bearing acreage for raisin and table varieties were 0.4 percent and 2 percent, respectively.

The Thompson seedless variety continues to be the most predominant grape variety grown in California. Although this variety is used primarily in making raisins, it is also used for fresh-market consumption and in the production of juice concentrates and wine. Flame seedless is the leading table grape variety, but bearing acreage was 4 percent smaller in 2000, while bearing acreage for the Redglobe variety rose 8 percent. Prominent wine grape varieties are Chardonnay and French Colombard for white wine and Cabernet Sauvignon, Zinfandel, and Merlot for red wine. Among these popular varieties, increases in bearing acreage last year, however, were most significant for Cabernet Sauvignon (up 21 percent), Merlot (up 15 percent), and

Table 5--Grapes: Total production and season-average price received by growers in principal States, 1998-2000, and indicated 2001 production

State	Production				Price		
	1998	1999	2000	2001	1998	1999	2000
	-- Million pounds --				-- Cents per pound --		
Arizona	46	42	40	36	37.6	40.1	35.9
Arkansas	9	10	8	8	24.9	23.7	28.0
Georgia	6	7	7	6	55.5	58.5	61.5
Michigan	141	150	174	58	14.1	14.1	13.9
Missouri	4	6	6	5	26.6	29.2	27.8
New York	256	410	308	262	15.6	14.3	14.9
North Carolina	3	4	5	4	51.5	57.5	58.0
Ohio	12	18	15	13	16.5	16.8	16.4
Oregon	29	36	37	46	59.0	65.5	70.0
Pennsylvania	108	176	126	110	13.7	13.8	13.3
South Carolina	1	1	1	1/	76.0	28.5	33.5
Texas 2/				18			
Virginia 2/				9			
Washington							
Wine	140	140	180	210	46.1	45.5	45.0
Juice	304	390	350	380	13.4	13.0	13.3
All	444	530	530	590	23.7	21.6	24.1
Total 3/	1,060	1,389	1,258	1,166			
California:							
Wine	5,140	5,324	6,728	6,200	29.1	29.3	28.4
Table	1,286	1,516	1,546	1,600	25.0	27.6	28.4
Raisin 4/	4,154	4,244	5,784	4,000	14.6	16.1	8.5
All	10,580	11,084	14,058	11,800	22.9	24.0	20.2
United States	11,640	12,473	15,316	12,966	22.7	23.5	20.3

1/ Estimates discontinued in 2001. 2/ Estimates began in 2001. 3/ Some figures may not add due to rounding. 4/ Fresh weight of raisin-type grapes.

Source: National Agricultural Statistics Service, USDA.

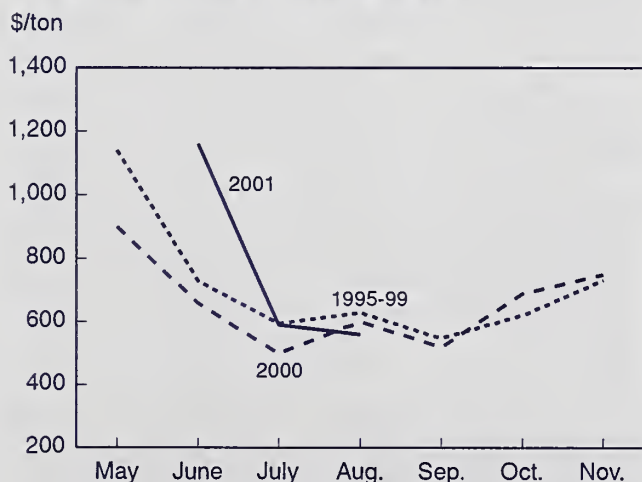
Chardonnay (up 10 percent). Bearing acreage for French Colombard declined 5 percent.

Reduced production this year points to higher grape prices. Grower prices for fresh-market grapes from May through August declined seasonally and averaged \$770 per ton, up 31 percent from the same period a year ago. Less competition from smaller crops of stone fruit and citrus provided additional upward pressure on fresh grape prices during the summer. Retail prices for fresh Thompson seedless grapes also declined seasonally, but the June-July average was 35 percent higher than the same period in 2000.

A combination of reduced production and higher prices will likely lead to a decline in domestic fresh grape consumption during the 2001/02 season. Export prospects will also be limited by these same factors but the good quality of this year's crop and continued strong international demand are keeping shipments to foreign markets higher than a year ago thus far this season. Domestic consumption of fresh grapes is forecast to decline about 4 percent from the 2000 estimate of 7.5 pounds per person. With the record production last year, U.S. exports of fresh grapes for the 2000/01 season (May-April) were 24 percent above the same period a year earlier, reflecting increased exports to major North American markets and many important Asian Pacific Rim markets. For the new season, shipments to many Asian markets continue strong thus far (May-June) resulting in a 4-percent increase in total export volume from the same period a year ago.

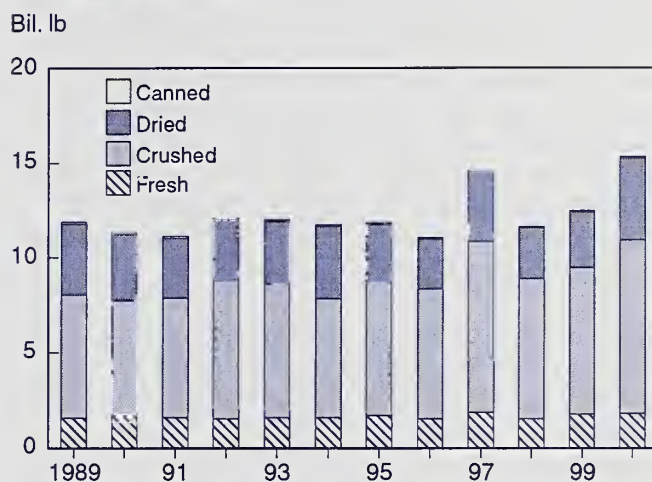
Due to the smaller crop this year, U.S. imports of fresh grapes will likely increase during 2001/02 to help meet consumer demand in the United States, especially if no major weather problems arise to curtail this year's grape production in Chile, the dominant foreign supplier to the U.S. mar-

Figure 5
U.S. grower prices for fresh grapes



Source: National Agricultural Statistics Service, USDA.

Figure 6
U.S. grape utilization



Source: National Agricultural Statistics Service, USDA.

ket. Import volumes are heaviest during January through April, when domestic production is in its off season. During the 2000/01 season (May-April), U.S. imports of fresh grapes declined 4 percent from the previous year to 954.9 million pounds, partly reflecting last year's fresh-market production that was the second largest on record (table 6). The largest volume harvested for the fresh market was reported in 1997 at 937,100 short tons. Imports from Chile registered a 5-percent decline and accounted for 76 percent of total import volume during 2000/01. Imports from Canada and the Republic of South Africa also declined, but shipments increased from Mexico and Argentina. Combined, these other suppliers made up most of the remaining import volume. During the same period, U.S. exports of fresh grapes rose 24 percent to 655.7 million pounds, with increased volumes shipped to most major markets, except to Hong Kong.

Record-large production for the processing sector during 2000 pressured down prices growers received for processing grapes. In particular, production increased for grapes used for making wine (up 23 percent) and raisins (up 48 percent). Correspondingly, grower prices for these two processing

Table 6--U.S. imports of fresh grapes, by country, (May-April)
1997/98-2000/01

Source	1997/98	1998/99	1999/00	2000/01
Million pounds				
Chile	662.2	608.5	757.5	722.9
Mexico	166.9	223.5	192.7	199.9
Argentina	0.6	1.4	5.3	11.6
Canada	7.1	9.2	13.0	9.8
Rep. of South Africa	22.7	30.0	22.9	5.4
Other	2.6	2.2	2.4	5.4
World	862.2	874.6	993.7	954.9

Source: Bureau of the Census, U.S. Department of Commerce.

categories declined 4 percent (to \$511 per ton) and 54 percent (to \$133 per ton), respectively. Grapes crushed for wine production, accounted for 61 percent of processing grape production while grapes dried to make raisins made up 32 percent. During the same period, production declines reported for grapes for canning and for juice resulted in higher grower prices in both categories. These price increases were not enough to offset the price declines in the more dominant processing categories. The 2000 season-average price for processing grapes was \$373 per ton, down 15 percent from the previous year.

Continued strong domestic demand contributed to a 10-percent increase in U.S. wine imports during 2000 from a year ago, reaching 121.1 million gallons. Among the top five suppliers last year, imports rose from Italy, France, Australia, and Chile but declined from Spain. Also strong was the export market for U.S. wine. U.S. wine exports reached another record in 2000, increasing 6 percent from a year ago, to 73.9 million gallons. The five leading markets last year were the United Kingdom, Canada, Japan, the Netherlands, and Switzerland, whose combined share was 72 percent of the U.S. wine export market. Export gains were achieved to these leading markets, except to Japan and Switzerland. U.S. wine imports and exports from January-June 2001 were up 6 percent and up 11 percent, indicating a continuing strong market for wine both domestically and internationally.

Larger domestic production and carry-in stocks during 2000, combined with sharply lower grower prices, helped promote U.S. raisin exports during the 2000/01 season (August through July). Exports through June increased 41 percent. Imports for the same period fell 33 percent. Ending stocks of domestic raisins remained large in 2000 and along with depressed prices are expected to lower production in 2001/02. While domestic supplies are still likely to remain large in 2001/02 even with lower production, exports are likely to decline due to a large world surplus of cheaper raisins entering into the new season.

U.S. Pear Crop Smaller in 2001

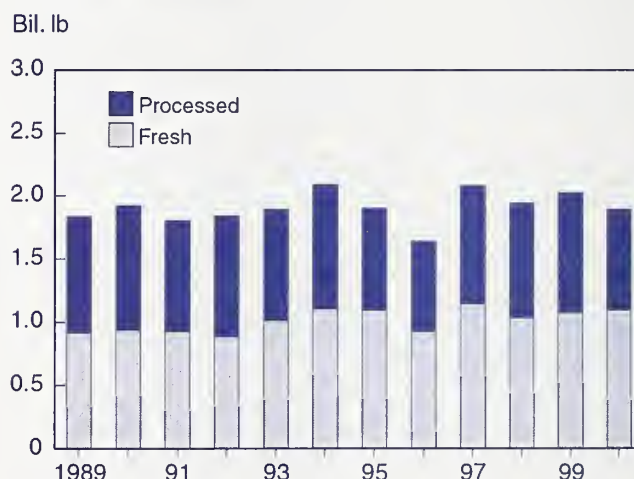
Total U.S. pear production for 2001 is forecast down 5 percent from 2000 to 1.8 billion pounds (table 7). The harvest of Bartlett pears is projected to decline for the second consecutive year, reaching 946.0 million pounds. The size of the Bartlett crop is 9 percent smaller than a year ago and 19 percent below 1999. Combined production of other U.S. pear varieties is forecast at 885 million pounds, down 1 percent.

Bartlett production is forecast down in California (18 percent) and Oregon (3 percent), but up in Washington (5 percent). These three Pacific Coast States produce nearly all the Bartlett pears in the United States. Frost and hail affected California's production during the early spring. Oregon's production also experienced little frost damage. In Washington,

growing conditions were generally favorable but below average rainfall still remains a concern among growers.

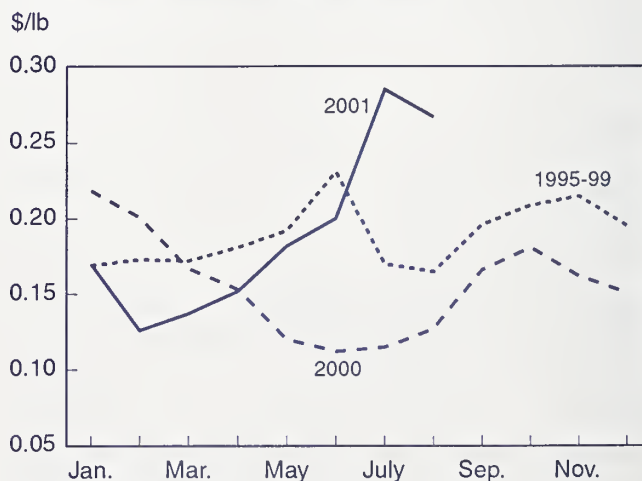
The overall decline in production this year, combined with the depletion of carry-in stocks, will help boost grower prices during the 2001/02 marketing season. For the new season thus far (July-August), grower prices for fresh pears averaged \$552 per ton, compared with \$242 per ton during the same period a year ago. As of June 30, 2001, the end of the 2000/01 marketing season, stocks of both Bartlett and other variety pears were already exhausted relative to the same period a year ago. Bartlett pears are mostly used for processing while other-than-Bartlett pears are primarily utilized for the fresh market. In the fresh-market sector, lower supplies and higher prices will likely lead to more imports,

Figure 7
U.S. pear utilization



Source: National Agricultural Statistics Service, USDA.

Figure 8
U.S. grower prices for fresh pears



Source: National Agricultural Statistics Service, USDA.

Table 7--Pears: Total production and season-average price received by growers, 1998-2000, and indicated 2001 production

State	Production 1/				Price		
	1998	1999	2000	2001	1998	1999	2000
	--- Million pounds ---				--- Cents per pound ---		
Pacific Coast:							
California:							
Bartlett	554	622	564	460	12.3	10.4	10.3
Other	60	60	60	60	21.8	14.8	21.9
Total	614	682	624	520	13.2	10.8	11.4
Oregon:							
Bartlett	130	132	120	116	17.1	14.9	14.9
Other	360	320	320	320	16.9	23.5	15.3
Total	490	452	440	436	16.9	21.0	15.2
Washington:							
Bartlett	320	420	352	370	14.5	11.4	12.7
Other	460	430	460	460	13.4	17.1	13.4
Total	780	850	812	830	13.9	14.3	13.1
Three States:							
Bartlett	1,004	1,174	1,036	946	13.7	11.3	11.7
Other	880	810	840	840	15.4	19.5	14.7
Total	1,884	1,984	1,876	1,786			
Colorado	7	1	6	4	22.5	32.9	18.8
Connecticut	2	2	3	1	38.8	38.8	28.1
Michigan	10	10	10	10	13.6	13.3	13.5
New York	23	25	29	20	18.8	19.4	17.7
Pennsylvania	12	8	9	9	17.6	21.3	25.5
Utah	2	1	1	1	15.4	22.9	26.7
Total	56	47	58	45			
United States							
Bartlett	1,004	1,174	1,080	946	13.7	11.3	11.7
Other	936	857	898	885	15.4	19.5	14.7
Total	1,940	2,031	1,934	1,831	14.6	14.7	13.2

1/ Includes unharvested production and production not sold.

Source: National Agricultural Statistics Service, USDA.

fewer exports, and a decline in domestic consumption from the 3.3 pounds per person estimated for 2000.

Although overall production was down last year, more pears were sent to the fresh market, including the diversion of some processing pears into fresh use. Increased fresh-market supplies have put downward pressure on fresh-market grower prices. The 2000 season-average grower price for fresh pears dipped 19 percent from the previous year, to 15.9 cents per pound, the lowest price over the last 6 years. While lowering returns to growers, increased supplies, lower prices, and the good quality of the fruit have spurred demand for exports. U.S. exports of fresh pears during 2000/01 (July-June) rose 10 percent from the previous season, while imports declined 6 percent. Fresh export shipments rose to most of its primary markets, especially to Mexico, but declined to Canada.

Stone Fruit Production Down in 2001

Overall stone fruit production (peaches, nectarines, plums, prunes, apricots, and cherries) in 2001 is expected to be down from a year ago. Harvest of most stone fruit crops are

expected smaller, except for sweet and tart cherries. U.S. peach production is forecast at 2.54 billion pounds for 2001, down 2 percent from last year, but up 4 percent from the previous 5-year average (table 8). Prune production in California (dried basis) is forecast 29 percent below a year ago, and combined output of prunes and plums harvested in Idaho, Michigan, Oregon, and Washington is expected 4 percent lower (table 9). U.S. apricot production is forecast at 162 million pounds, down 18 percent from a year ago, while total sweet and tart cherry production are forecast up 14 percent and 24 percent, respectively (tables 10, 11, and 12). USDA will not report this year's production of California nectarines and plums until January 2002, but estimates from the California Tree Fruit Agreement, a grower-funded organization that promotes fresh-market stone fruit, indicate that packout levels will be down from last year for both crops.

California is a dominant producer of many stone fruit. Adverse winter and spring weather in California led to the harvest of smaller crops of most stone fruit in the State this summer. Although having no effect on early-variety self-pollinating peaches and nectarines, heavy early-March rains hampered bee pollination of plum varieties that were already

Table 8--Peaches: Total production and season-average price received by growers, 1998-2000, and indicated 2001 production

State	Production				Price		
	1998	1999	2000	2001	1998	1999	2000
	-- Million pounds --				-- Cents per pound --		
Alabama	16	20	14	25	45.6	29.7	40.5
Arkansas	13	12	18	16	32.8	34.0	37.0
California	1,726	1,822	1,855	1,830			
Clingstone	1,045	1,059	1,064	1,050	11.0	11.3	12.5
Freestone	681	763	791	780	15.7	16.0	15.7
Colorado	20	3	19	18	48.8	64.0	47.0
Connecticut	2	2	2	2	70.0	65.0	65.0
Georgia	70	110	115	135	34.5	37.3	37.9
Idaho	9	8	13	10	43.6	47.2	38.7
Illinois	15	19	23	19	43.3	38.9	41.2
Indiana	4	3	3	3	31.8	36.9	41.4
Kansas	1	1	1/	1/	47.0	42.0	1/
Kentucky	2	2	1	2	37.5	43.0	51.6
Louisiana	1	1	1	2	71.0	88.0	77.1
Maryland	11	9	9	9	30.0	47.1	39.8
Massachusetts	2	2	2	2	80.0	80.0	70.0
Michigan	43	23	48	43	27.2	23.7	24.9
Missouri	9	11	10	9	39.6	41.7	35.0
New Jersey	70	70	65	75	44.9	43.3	42.7
New York	10	14	12	13	41.6	45.4	40.0
North Carolina	25	28	32	12	38.0	36.0	37.0
Ohio	7	9	10	11	41.6	44.7	46.8
Oklahoma	20	15	14	12	41.2	49.3	50.9
Oregon	8	7	8	7	31.6	36.5	42.3
Pennsylvania	65	75	60	65	31.7	32.2	28.7
South Carolina	140	160	150	100	26.0	20.4	20.4
Tennessee	3	3	3	4	45.0	47.0	54.5
Texas	24	13	21	30	52.0	62.0	58.0
Utah	7	6	11	9	27.0	32.8	30.0
Virginia	14	15	10	9	30.0	29.0	30.0
Washington	52	51	65	55	51.5	44.4	32.5
West Virginia	13	13	7	12	26.4	30.2	25.6
United States	2,401	2,526	2,600	2,537	19.2	19.0	19.5

1/ Estimates discontinued in 2000.

Source: National Agricultural Statistics Service, USDA.

Table 9--Plums and prunes: Production and season-average price received by growers in principal States, 1998-2000, and indicated 2001 production

State/item	Production				Price		
	1998	1999	2000	2001	1998	1999	2000
	-- Million pounds --				-- Cents per pound --		
California:							
Plums	376	392	394	na	26.5	21.0	22.1
Prunes (fresh basis)	1,259	957	1,262	na	12.0	14.9	13.4
Total California	1,635	1,349	1,656	na			
Prunes (dried basis)	206	356	438	310	38.2	43.1	42.0
Prunes and plums:							
Idaho	9	4	7	6	27.7	14.4	19.9
Michigan	7	8	7	6	15.0	15.0	13.1
Oregon	21	26	20	24	13.7	7.9	9.6
Washington	14	8	14	10	11.0	12.1	8.0
Total four States	51	46	48	46	15.6	10.4	11.2
United States	1,686	1,395	1,704	na			

na = Not available.

Source: National Agricultural Statistics Service, USDA.

Table 10--Apricots and nectarines: Total production and season-average price received by growers, 1998-2000, and indicated 2001 production

Item and State	Production				Price		
	1998	1999	2000	2001	1998	1999	2000
	-- Million pounds --				-- Cents per pound --		
Apricots--							
California	226	170	184	150	15.6	18.1	16.5
Utah	0.4	1/	0.8	0.4	36.4		30.6
Washington	11	11	13	12	31.5	42.5	36.4
United States	237	181	198	162	16.4	19.6	18.0
Nectarines--							
California	448	548	534	na	23.6	20.6	19.9

na = Not available.

1/ No significant production due to frost damage.

Source: National Agricultural Statistics Service, USDA.

Table 11--Sweet cherries: Total production and season-average price received by growers, 1998-2000, and indicated 2001 production

State	Production				Price		
	1998	1999	2000	2001	1998	1999	2000
	-- Million pounds --				-- Cents per pound --		
California	30.4	162.0	94.0	120.0	77.5	43.3	78.5
Idaho	4.4	3.8	6.0	3.2	53.5	81.5	79.5
Michigan	70.0	54.0	39.2	60.0	28.1	26.7	24.3
Montana	4.1	1.4	2.2	3.4	54.0	78.0	74.5
New York	1.4	2.1	1.8	2.0	103.5	74.5	68.5
Oregon	81.0	71.0	74.0	80.0	42.4	39.5	38.0
Pennsylvania	1.1	1.6	1.0	1.1	116.0	130.0	109.0
Utah	5.4	2.3	4.8	2.2	34.4	50.0	53.0
Washington	196.0	134.0	190.0	200.0	65.5	86.5	81.5
United States	393.8	432.2	413.0	471.9	55.0	55.0	67.0

Source: National Agricultural Statistics Service, USDA.

Table 12--Tart cherries: Total production and season-average price received by growers, 1998-2000, and indicated 2001 production

State	Production				Price		
	1998	1999	2000	2001	1998	1999	2000
	-- Million pounds --				-- Cents per pound --		
Colorado	1.3	0.6	0.9	1.0	30.7	30.3	26.5
Michigan	263.0	185.0	200.0	293.0	14.0	22.8	18.2
New York	14.0	17.0	16.6	13.0	18.0	15.7	18.0
Oregon	2.8	5.3	4.4	2.5	12.7	23.9	21.0
Pennsylvania	4.2	7.2	6.1	4.6	19.0	29.3	14.9
Utah	33.0	14.5	33.0	14.0	16.0	18.6	25.0
Washington	14.0	16.5	17.5	17.5	12.0	17.5	14.3
Wisconsin	15.8	10.0	10.0	11.0	15.1	19.5	22.8
United States	348.1	256.1	288.5	356.6	14.5	21.8	18.7

Source: National Agricultural Statistics Service and Economic Research Service, USDA.

in full bloom. An April hailstorm also caused sporadic damage to stone fruit orchards in the State, and crop losses in areas affected were mostly significant. In the Fresno area, for example, the California freestone peach crop suffered severe damage, contributing to a 1-percent reduction in the State's freestone production over last year. Strong winds and cold weather also caused some localized losses to sweet cherry production, but the State's sweet cherry crop is expected to increase 50 percent from last year's significantly reduced crop. This year, California is the United States' second largest producer of sweet cherries, next to Washington.

Weather conditions in Washington were generally favorable throughout the growing period, but rains late in the growing season resulted in a sweet cherry crop smaller than previously anticipated. Despite crop damages caused by the rains, production in the State is expected to be up 5 percent from a year ago at 200 million pounds, partly reflecting more bearing acres coming into production. Meanwhile, Washington's tart cherry production is anticipated to remain unchanged.

In Michigan, weather conditions were generally favorable during bloom that had contributed to a good fruit set for both the State's sweet and tart cherry crops. Post-bloom conditions also remained favorable except for isolated hailstorms. The sweet and tart cherry crops in Michigan are forecast up 53 percent and up 47 percent from a year ago. Michigan's sweet cherry production this year has rebounded to more normal levels, following last year's freeze-damaged output while its tart cherry output is the largest since 1995. Sweet cherry crops in the Northeast region experienced generally similar weather conditions and production, such as in New York and Pennsylvania, and are expected larger than last year. Frost early in the growing season, however, reduced tart cherry production in both these States.

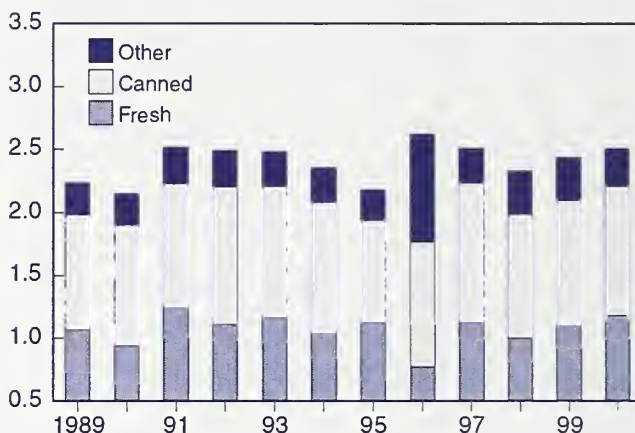
Peaches account for a large proportion of total stone fruit production in the United States. While reported to be of generally good quality, California is expected to harvest 1 percent fewer peaches this year, for a total of 1.83 billion pounds. Both the State's clingstone and freestone crops are forecast 1 percent smaller than last year. Among other important peach producers, production in Georgia is expected 17 percent larger, while output in South Carolina is expected down 33 percent due to a mix of weather problems.

Partly due to reduced supplies, grower prices for fresh peaches have held strong. Although prices have declined seasonally, grower prices from May through August averaged 24 percent higher than the same period a year ago. At the retail end, prices have also declined seasonally and averaged higher than a year ago during the months of June and July. These higher prices, along with reduced supplies, will likely keep domestic consumption of fresh peaches (including nectarines) in 2001 below last year's 5.6 pounds per person. Reduced supplies of apricots and California plums are also expected to lead to higher prices and decreased domestic consumption in 2001.

Figure 9

U.S. peach utilization

Bil. lb

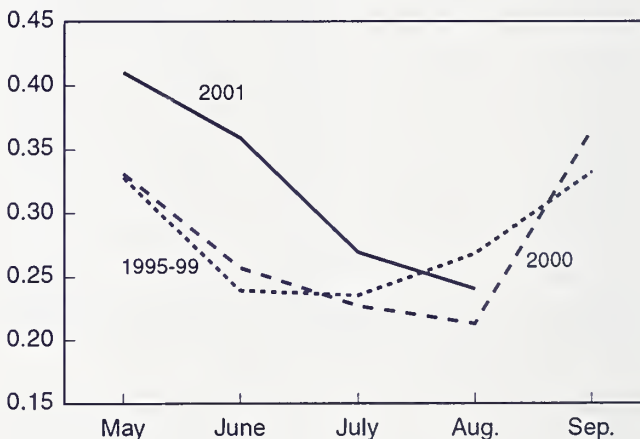


Source: National Agricultural Statistics Service, USDA.

Figure 10

U.S. grower prices for fresh peaches

\$/lb



Source: National Agricultural Statistics Service, USDA.

The larger sweet cherry crop, meanwhile, will likely increase domestic cherry consumption about 4 percent from last year's estimate of 0.61 pound per person.

Except for cherries, export prospects for U.S. stone fruit will be limited by the smaller crops harvested this year. Continued strong demand in international markets, however, are keeping shipment volumes above a year ago thus far but at a much smaller growth rate. Exports of fresh peaches (including nectarines) from May through June this year were up only fractionally from the same period in 2000, compared with a 59-percent increase this time last year. Exports increased to important markets such as Taiwan and Mexico but exports were lower to Canada, the leading mar-

ket, and to Hong Kong, also a large market. U.S. exports of fresh plums thus far are up 8 percent, while this time last year exports were up 43 percent. U.S. exports of sweet cherries increased 9 percent. Well over half the volume went to Japan, the number one market for U.S. sweet cherries, with shipments up 6 percent despite the country's weak economy.

2001 Strawberry Supplies Lag Last Year, Prices Average Higher

Commercial strawberry production in five major producing States—California, Florida, Oregon, Michigan, and New Jersey—is forecast at 1.64 billion pounds in 2001, down 8 percent from production levels in comparable States a year ago (table 13). In California, the largest producer, production is forecast to decline 7 percent, to 1.41 billion pounds. Cool and wet conditions have generally delayed crop development in most of these States and caused either rain damage or disease problems. Production is expected lower in all States but New Jersey. Acres harvested are down 4 percent from a year ago, with only Florida showing an increase. Average yields in Florida, however, are down 17 percent, causing output in the State to drop. Average yields are also expected lower in the other States, except in New Jersey and Oregon. Production in Oregon benefited from excellent weather conditions but output is expected to be 3 percent smaller as some acreage will not be harvested due to poor economic conditions. USDA previously included an in-season (spring) forecast for strawberry production in Washington. However, this forecast was discontinued in 2000. Instead, the production estimate for Washington will be reported in the Vegetable 2001 Summary to be released in January 2002.

Decreased supplies are keeping monthly grower prices for fresh-market strawberries higher than last year. The January-August average was 88.0 cents a pound, up 35 percent from the same period in 2000. Cumulative shipments from California from January through July were running 17 percent behind (table 14). Winter shipments from Florida for the period November through May lagged the same period a year ago by 23 percent. Retail prices for fresh strawberries also averaged higher, at \$1.77 per 12-ounce pint (February-June), 16 percent higher than the same period a year ago. Decreased supplies and higher prices will likely lead to a decline in U.S. fresh strawberry consumption from the 2000 estimate of 4.80 pounds per person.

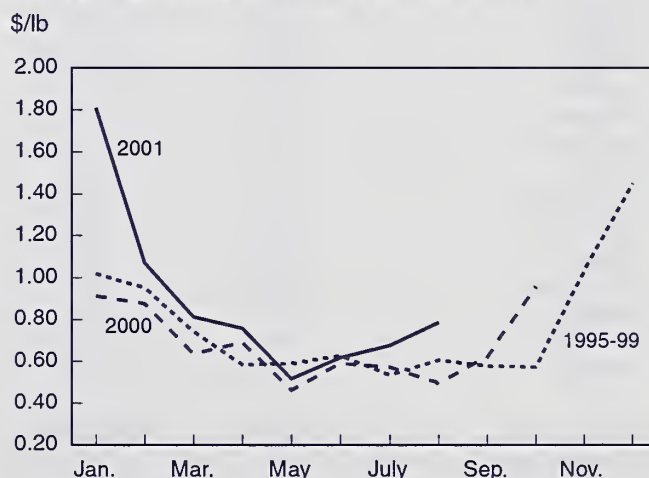
Despite the smaller domestic crop this year, U.S. fresh strawberry imports during the first 6 months of 2001 totaled 62.3 million pounds, 11 percent lower than the same period a year ago. Shipments from Mexico, the dominant supplier, are down 11 percent, reflecting a 3-percent decline in the country's fresh-market strawberry production. According to USDA's Foreign Agricultural Service, much of the decline in Mexico's strawberry output may be attributed to a smaller acreage being planted to the crop as a result of recent lower

market prices. Mexican growers, particularly in the state of Guanajuato, are utilizing areas formerly planted with strawberries to produce less risky crops such as broccoli, cauliflower, sorghum, wheat, and tomatoes.

The smaller U.S. crop and higher prices will likely limit this year's prospects for U.S. fresh strawberry exports. Aided in part by the larger 2000 U.S. strawberry crop, exports last year increased 10 percent from the year before and totaled 136.5 million pounds. Among the United States' major export markets, exports increased to both Canada and Mexico but declined to Japan. Already, exports during the first 6 months of 2001 are 8 percent behind the same period a year ago, reflecting mostly a decline in shipments to Canada that accounts for over 90 percent of the volume. In addition, exports to Japan were down sharply partly due to the country's sluggish economy that is resulting in a shift away from the consumption of the more expensive U.S. product to relatively cheaper strawberries from China.

Strawberries for the processing sector are running behind a year ago. The National Agricultural Statistics Service reported cold storage stocks of frozen strawberries as of June 30, 2001, to be 363 million pounds, 30 percent below the same period a year ago. In addition, imports, particularly those from Mexico, the largest supplier, are also lagging last year due to lower production. Because processing supplies are reduced, grower prices for processing strawberries are likely to average higher than last year. Despite reduced supplies, U.S. exports of frozen strawberries this year thus far (January-June) were up 16 percent from the same period a year ago, when exports were at the lowest level since 1993. Exports thus far this year remain below average compared with volumes shipped during the same period from 1995 through 1999.

Figure 11
U.S. grower prices for fresh strawberries



For November and December 2000 insufficient marketing to establish price.

Source: National Agricultural Statistics Service, USDA.

Table 13--Strawberries: Harvested area, yield per acre, and total production, United States, 1996-2001

State	1996	1997	1998	1999	2000	2001
-- Acres --						
Harvested area:						
Arkansas	170	210	210	230	1/	na
California	25,200	22,600	24,200	24,600	27,600	26,400
Florida	6,000	6,100	6,200	6,200	6,300	6,500
Louisiana	750	450	400	400	1/	na
Michigan	1,500	1,500	1,500	1,400	1,300	1,100
New Jersey	450	450	500	450	450	400
New York	1,900	1,600	1,700	1,700	1,700	na
North Carolina	1,800	1,500	1,700	1,700	1,800	na
Ohio	1,000	950	1,200	1,200	1,200	na
Oregon	5,200	5,000	4,500	4,200	3,500	3,100
Pennsylvania	1,300	1,400	1,200	1,300	1,300	na
Virginia 2/	na	na	na	na	500	na
Washington	1,300	1,400	1,500	1,500	1,500	na
Wisconsin	1,100	1,100	1,200	1,200	1,200	na
U.S. total	47,670	44,260	46,010	46,230	49,100	na
-- Pounds per acre--						
Yield per acre:						
Arkansas	2,100	7,100	4,400	5,200	1/	na
California	54,000	59,000	56,000	61,500	55,000	53,500
Florida	26,000	29,000	26,000	30,000	35,000	29,000
Louisiana	7,500	11,000	15,000	15,000	1/	na
Michigan	4,000	6,500	6,800	6,400	6,900	6,200
New Jersey	3,500	4,400	4,400	4,400	3,600	5,000
New York	3,900	4,200	3,800	4,900	4,100	na
North Carolina	9,000	12,000	12,500	11,000	13,500	na
Ohio	3,600	3,600	5,200	4,000	4,400	na
Oregon	9,200	10,000	11,500	9,900	10,000	11,000
Pennsylvania	4,300	4,600	4,200	4,000	5,000	na
Virginia 2/	na	na	na	na	11,000	na
Washington	8,100	6,500	8,000	8,000	8,600	na
Wisconsin	4,000	5,100	5,500	4,700	4,400	na
U.S. total	34,100	36,800	36,300	39,700	38,700	na
-- Million pounds --						
Total production:						
Arkansas	0.4	1.5	0.8	1.1	1/	na
California	1,360.8	1,333.4	1,355.2	1,512.9	1,518.0	1,412.4
Florida	156.0	176.9	161.2	186.0	220.5	188.5
Louisiana	5.6	5.0	6.0	6.0	1/	na
Michigan	6.0	9.8	9.5	9.0	9.0	6.8
New Jersey	1.6	2.0	2.0	2.0	1.6	2.0
New York	7.4	6.7	6.1	7.8	6.5	na
North Carolina	16.2	18.0	20.0	17.6	23.1	na
Ohio	3.6	3.4	5.2	4.0	4.4	na
Oregon	47.8	50.0	50.6	41.6	35.3	34.1
Pennsylvania	5.6	6.4	5.0	5.2	6.5	na
Virginia 2/	na	na	na	na	5.4	na
Washington	10.5	9.1	12.0	12.0	12.9	na
Wisconsin	4.4	5.6	6.1	5.2	4.4	na
U.S. total	1,625.9	1,627.8	1,639.7	1,810.4	1,847.6	na

na = Not available.

1/ Estimates discontinued in 2000.

2/ Added to estimating program in 2000.

Source: National Agricultural Statistics Service, USDA.

Table 14--Fresh strawberry shipments in the United States, monthly, by source, 1996-2001

Source/year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Annual
Million pounds													
California													
1996	19.2	26.9	71.4	209.7	175.3	115.3	112.3	79.2	54.2	51.2	8.5	1.6	924.8
1997	7.2	24.8	101.4	184.8	195.5	104.1	94.0	76.9	48.1	36.7	14.3	1.9	889.9
1998	14.0	6.5	58.9	163.7	157.7	156.6	124.4	71.5	62.9	37.3	9.5	2.2	865.2
1999	6.9	17.1	60.9	145.2	216.0	172.2	134.5	76.9	62.3	52.6	21.9	9.3	975.8
2000	26.3	23.1	80.4	192.5	232.5	164.7	118.1	106.3	70.2	31.7	10.2	5.1	1,061.3
2001	16.4	25.2	56.5	154.5	284.0	144.8	101.5						
Florida													
1996	7.4	9.2	35.6	8.1	0.1	--	--	--	--	--	0.5	10.5	71.4
1997	21.2	46.8	33.1	0.2	--	--	--	--	--	--	0.3	10.5	112.1
1998	18.0	28.0	34.7	10.2	--	--	--	--	--	--	1.9	16.4	109.2
1999	24.8	19.1	47.6	9.0	0.1	--	--	--	--	--	0.8	14.0	115.4
2000	30.1	42.1	50.9	3.2	0.1	--	--	--	--	--	0.8	12.5	139.6
2001	20.8	34.2	39.6	1.4	0.1	--	--						
Mexico													
1996	5.2	7.7	13.4	21.4	11.4	1.7	--	--	--	--	0.9	2.2	55.4
1997	4.6	6.0	14.1	3.3	0.3	--	--	--	--	--	0.5	1.6	63.9
1998	4.7	6.3	11.3	13.9	8.3	7.7	2.2	--	--	--	1.0	1.4	56.8
1999	3.9	7.4	16.8	24.0	25.0	15.9	4.0	--	--	0.1	1.1	2.3	100.5
2000	7.3	11.0	14.4	18.5	12.3	6.5	1.2	--	0.1	0.1	0.9	1.4	73.7
2001	6.8	10.0	12.6	14.0	10.8	5.9	9.2						
Total													
1996	31.8	43.8	120.4	239.2	186.8	117.0	112.3	79.2	54.2	51.2	9.9	14.3	1,060.1
1997 1/	33.0	77.6	148.6	188.5	196.2	104.1	94.2	76.9	48.1	36.7	15.5	14.9	1,034.5
1998 1/	36.7	40.8	104.9	187.9	166.6	164.4	126.6	71.5	62.9	37.4	13.6	20.6	1,033.9
1999 1/	35.6	43.6	125.3	178.7	241.9	188.2	138.6	77.1	62.3	52.7	24.6	26.0	1,194.6
2000 1/	63.7	76.2	145.7	214.9	245.8	171.9	119.5	106.6	70.3	32.0	13.4	19.4	1,279.4
2001 1/	44.0	69.4	108.4	170.4	296.4	150.7	104.1						

-- = No shipments reported.

1/ Total includes small volume shipments from North Carolina during April and May and import shipments from New Zealand during November and December.

Source: Agricultural Marketing Service, USDA.

Blueberry Production Expected Down in 2001

The National Agricultural Statistics Service will report its first official estimate of U.S. cultivated blueberry production for 2001 in January 2002. Based on preliminary crop indications reported by the North American Blueberry Council (NABC) as of July 18, 2001, the 2001 U.S. cultivated blueberry crop is estimated to be down 5 percent from last year's 185.3 million pounds (table 15). The smaller overall crop reflects reduced production in all major blueberry-producing States except New Jersey and Washington, where the crops are estimated 3 percent and 14 percent larger than last year. Producing over one-third of the U.S. crop, this year's output in Michigan, the largest producer, is estimated to be down 3 percent due in part to some freeze damage and an extended dry spell that has not only caused volume to decline but also reduced sizing of berries. For the same period, combined production in Oregon, North Carolina, and Georgia are estimated down 15 percent.

Of the U.S. cultivated blueberry crop, NABC estimated both fresh and processing use in 2001 to be down slightly from a

year ago. While fresh-market production in the two largest cultivated blueberry-producing States—Michigan and New Jersey—were estimated unchanged and 8 percent larger than a year ago, respectively, production declines in other areas such as in North Carolina (17 percent), Indiana (33 percent), and Arkansas, including other Southern States (15 percent) were enough to reduce total U.S. fresh use. Limited supplies, along with strong domestic demand, will likely keep fresh-market blueberry grower prices above last year's \$1.30 per pound and exports of the fresh product lower. Cumulative U.S. exports of fresh blueberries from January through June were down 3 percent from the same period a year ago, with lower shipments to Japan, a significant market currently experiencing economic problems. U.S. imports of fresh blueberries for the same period, primarily from Chile, totaled 6.6 million pounds, up 16 percent.

Cultivated production for processing use will be down mainly due to lower outputs in Michigan (down 5 percent), Oregon (4 percent), North Carolina (50 percent), and Georgia (28 percent) for this sector. In addition, the New England Agricultural Statistics Service forecast the wild

Table 15--North American blueberry production, 1997-2001

State or Province	1997	1998	1999	2000	20001f
Million pounds					
Cultivated:					
Michigan	72.0	49.0	70.0	62.0	60.0
New Jersey	35.0	37.0	41.0	35.0	38.3
British Columbia	22.3	34.1	32.5	41.7	43.0
Oregon	21.0	23.0	22.5	28.0	27.2
North Carolina	8.6	15.0	13.0	18.0	13.0
Washington	8.7	10.7	11.1	12.4	14.1
Georgia	14.0	9.0	12.0	20.0	15.6
Ontario	1.2	1.4	1.8	1.3	1.0
Other	10.7	9.4	8.7	9.9	7.6
Total	193.5	188.6	212.5	228.3	219.8
U.S.	170.0	153.1	178.2	185.3	175.8
Wild:					
Maine	73.8	63.0	65.9	110.6	90.0
Quebec	31.3	3.3	14.4	19.0	na
Nova Scotia	22.9	22.7	41.5	41.3	na
New Brunswick	8.8	11.9	14.0	13.0	na
Newfoundland and Prince Edward Island	1.2	2.3	0.9	0.6	na
	2.8	2.4	4.6	5.4	na
Total	140.7	105.6	141.3	189.9	na
Total U.S.	243.8	216.1	244.1	295.9	265.8

na = Not available. f = Forecast for cultivated varieties from the Economic Research Service, USDA, based on crop indications from the North American Blueberry Council. Forecast for wild varieties from New England Agricultural Statistics Service.

Sources: National Agricultural Statistics Service, USDA and the North American Blueberry Council (Canada).

blueberry crop in Maine this year to be 90 million pounds, 19 percent smaller than last year's record-large crop but 21 percent above the 5-year average. Although fruit set for the wild crop was reported to be above average, insufficient rainfall in most parts of the State caused berry size to be below average. Much of the wild blueberry crop is for pro-

cessing and it also constitutes a large proportion of total processing use in the United States.

Although production for processing use this year is expected to be lighter, grower prices for processing blueberries are likely to be under pressure from large carry-in stocks (table 16). USDA reported U.S. stocks of frozen blueberries on January 1, 2001, to be 45 percent above the same period a year ago. There will also be added pressure from increased competition likely resulting from more imports of frozen blueberries this year, as a larger harvest is expected in Canada, the major supplier to the United States. The preliminary estimate from NABC has the 2001 Canadian cultivated blueberry crop 2 percent larger than a year ago. U.S. imports of frozen blueberries from January through June, mostly from Canada, were up 21 percent from the same period a year ago.

Kiwifruit Imports Continue Higher

The United States is a net importer of kiwifruit. U.S. kiwifruit imports averaged 75 million pounds during the 1990s, while exports averaged 17 million pounds. As U.S. consumers turned more health conscious in the 1990s, heightened publicity over the nutritional value of kiwifruit aided in increasing domestic consumption of this fruit. Kiwifruit consumption in the United States increased from 0.14 pound per person in 1985 to a peak of 0.60 pound in 1993, and averaged 0.52 pound during the 1990s. More than half of the supplies available in the U.S. market during the

Table 16--Blueberry prices received by growers, 1998-2000

Use and State	1998	1999	2000
Cents per pound			
All Uses:			
Michigan	61.8	78.1	88.9
New Jersey	78.8	93.8	106.0
North Carolina	91.3	103.0	104.0
Oregon	50.2	79.7	76.8
Washington	62.5	72.0	75.5
U.S. average	72.5	88.3	97.2
Fresh:			
Michigan	86.0	113.0	125.0
New Jersey	87.0	102.0	115.0
North Carolina	109.0	119.0	130.0
Oregon	72.0	105.0	91.0
Washington	103.0	122.0	117.0
U.S. average	96.8	116.0	130.0
Processed:			
Michigan	50.0	66.0	73.0
New Jersey	50.0	73.0	85.0
North Carolina	35.0	51.0	64.0
Oregon	38.5	67.0	70.0
Washington	53.0	64.0	66.0
U.S. average	47.7	66.0	72.7

Source: National Agricultural Statistics Service, USDA.

mid-to-late 1980s was from the domestic crop. However, this has changed over the last decade with imports gaining in importance. Over the last 6 years, imports made up over 50 percent of domestic supplies and continued to increase in volume in each of those years. Cumulative imports for the 2000/01 season thus far (October-June) totaled 86.4 million pounds, 12 percent above the same period in 1999/2000 (table 17). The overall increase in imports stem from higher imports from Chile and New Zealand, two major markets, and a very steep increase in imports from Greece.

Virtually all U.S. kiwifruit is grown in California. Domestic production reached 68 million pounds in 2000, 26 percent larger than the below-average crop in 1999, but about the same as the average crop during 1996 through 1998 (table 18). While bearing acreage remained unchanged for the fourth consecutive year in 2000, ideal conditions for growing last year's fall crop increased averaged yields. Increased supplies of good quality fruit aided the export picture for the marketing year 2000/01. Cumulative exports from October 2000 to June 2001 totaled 11.6 million pounds, up almost 1 percent from the same period a year ago, with increased shipments to important markets such as Mexico and Japan. Exports to Canada, however, the leading market, were down 3 percent. Industry sources have indicated that although perhaps slightly smaller than last year due to frost and hail damage in the spring, another strong crop is expected for the fall of 2001. Besides having one of the largest fruit sets (meaning number of fruit per vine) on record, excellent fruit quality is also expected, aiding in the marketability of the fruit both here and internationally.

Table 17--U.S. imports of fresh kiwifruit, by country,
(October-September) 1996/97-2000/01

Sources	1996/97	1997/98	1998/99
	1,000 pounds		
Chile	61,490	59,483	55,050
Italy	14,729	4,298	8,783
New Zealand	5,663	27,796	31,926
Other countries	1,188	986	2,078
World	83,070	92,563	97,837
	1999/2000	1999/2000	2000/01
	(October-June) (October-June)		
	1,000 pounds		
Chile	54,399	42,636	43,664
Italy	19,165	19,165	15,508
New Zealand	33,479	12,145	19,642
Other countries	3,034	3,034	7,589
World	110,077	76,980	86,403

Source: Bureau of the Census, U.S. Department of Commerce.

Table 18--California kiwifruit: Acreage, production, and value,
1995-2000

Year	Bearing acreage	Total production	Price 1/ Cents per pound	Value 2/ 1,000 dollars
	Acres	Million pounds		
1995	6,100	75.6	23.0	15,434
1996	5,700	63.0	23.5	13,157
1997	5,300	70.0	25.9	16,483
1998	5,300	73.2	37.2	24,544
1999	5,300	54.0	31.7	15,215
2000	5,300	68.0	22.5	13,480

1/ Season-average grower price. 2/ Value is based on utilized production.

Source: National Agricultural Statistics Service, USDA.

Cranberry Production To Continue To Decline in 2001

U.S. cranberry production is expected to decline in 2001. USDA's August forecast of the 2001 U.S. cranberry crop totaled 558 million pounds, 1 percent smaller than last year (table 19). Production declines are expected in the major cranberry-producing States, except in Wisconsin. Crops in Massachusetts, New Jersey, Oregon, and Washington are expected to be 16 percent, 8 percent, 1 percent, and 2 percent smaller, respectively, while the crop in Wisconsin is expected to be 11 percent larger. As most of these States had average to good growing conditions, much of the decline in production may be attributed to a Federal marketing order established this year that will restrict the amount of cranberries that may be marketed during the 2001/02 season. The smaller production this year points to higher prices than last year but because carry-in inventories continue to be above average, prices are not expected to improve significantly. The Cranberry Marketing Committee, the group responsible for overseeing the Cranberry Marketing Order, estimates ending inventories for the 2000/01 crop year to decline from a year ago but remain large, at about 3.3 million barrels.

In recent years, cranberry production has exceeded market demand, resulting in mounting inventories and significant declines in grower prices. Production increased for four consecutive years since 1995, reaching an all-time high of 6.32 million barrels in 1999. At the same time, grower prices continued to decline from a high of \$65.9 in 1996 to as low as \$17.8 per barrel in 1999. During 2000, a Federal marketing order regulation was established by USDA that regulated the volume of cranberries that can be marketed during the 2000/01 season. Although weather-related problems also reduced yields in some production areas, the 11-percent decline in production last year was mostly attributed to the use of volume controls. In that same year, grower prices rose 10 percent from the record low in 1999 but remained well below average.

To continue the efforts to defeat the oversupply situation in the industry in recent years, USDA established a final rule

regulating the volume of cranberries that can be marketed during the 2001/02 season. This rule, effective June 28 of this year, establishes a marketable quantity of 4.6 million barrels which corresponds to the total amount of fruit that handlers may purchase from or handle for growers during the season. In addition, growers are only allowed to sell 65 percent of their sales history to processors for the 2001/02 season beginning September 1. Exempt from this volume regulation are fresh and organically-grown cranberries.

Growers and handlers/processors from Massachusetts, Rhode Island, Connecticut, New Jersey, Wisconsin, Michigan, Minnesota, Oregon, Washington, and Long Island in the State of New York are affected by this final rule. Due to the marketing restriction, many growers lowered their input use, which includes fertilizers, pesticides, irrigation, and leasing of bees for pollination. In addition, along with reducing planted acres, some growers prevented cranberries from budding by flooding some of their bogs during late spring.

Table 19--Cranberries: Total production and season-average prices received by growers, 1998-2000, and indicated 2001 production

State	Production				Price		
	1998	1999	2000	2001	1998	1999	2000
	-- Million pounds --				-- Cents per pound --		
Massachusetts	188	188	195	164	30.8	16.8	19.9
New Jersey	52	69	49	45	26.3	11.0	19.9
Oregon	36	31	37	36	39.8	11.9	18.9
Washington	17	15	18	18	25.0	12.8	25.2
Wisconsin	253	330	266	295	43.3	20.6	19.0
United States	544	632	564	558	36.6	17.8	19.6

Source: National Agricultural Statistics Service, USDA.

Tropical Fruit Outlook

Demand for fresh tropical fruit in the United States has been on the rise—a trend influenced mainly by the Nation's growing immigrant population. Because areas with tropical climate are limited in the United States, imports constitute the bulk of the U.S. tropical fruit market, with bananas accounting for over 85 percent of the total import volume. Bananas continue to lead fresh fruit consumption in the United States, averaging over 25 pounds per person each year during the 1990s and higher than the combined average per capita consumption of all fresh-market citrus. Of the various types of tropical fruit produced around the world, significant volumes of fresh pineapples, mangoes, and papayas are also being imported into the United States.

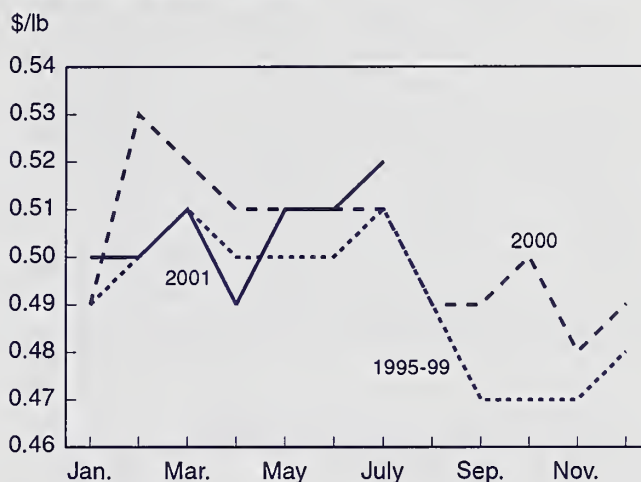
Banana Imports Down in 2000 but Prices Continue Lower

Imports constitute nearly all the banana supplies available in the U.S. market. Banana imports were fewer in 2000, decreasing 6 percent from 1999 but still more than any volume imported in the prior years (table 20). Imports were lower from major suppliers with the exception of Guatemala and Honduras. Imports from Costa Rica and Ecuador, the two largest suppliers for the U.S. market, were 15 percent and 16 percent lower, respectively. As Honduras' banana production region slowly recovers from major damage brought by Hurricane Mitch in November 1998, U.S. imports from that country were up sharply from 1999 but remained below pre-hurricane volumes. Imports from Honduras and Guatemala continue to increase in 2001, with shipments from January to June up 66 percent and up 31 percent from the same period a year ago. Imports from other major suppliers, meanwhile, continue to fall behind a year ago, dragging down overall imports thus far (January-June) for 2001 to 5 percent less than the volume during the same period last year.

Retail prices for bananas averaged \$0.51 a pound in 2000, the highest on record. Higher prices, along with reduced supplies and sharply lower fresh-market orange prices, have contributed to a decline in U.S. banana consumption last

Figure 12

Bananas: Retail prices



Source: Bureau of Labor Statistics, USDL.

year. Per capita consumption of fresh bananas is estimated to decrease 8 percent between 1999 and 2000 to 29.0 pounds. However, this level of consumption remains above the previous 5-year average. Retail prices in 2001 thus far (January-June) are averaging 2 percent lower than the same period a year ago despite fewer imports. Although these lower prices will help improve domestic demand for bananas, per capita consumption in 2001 will likely decline from last year's estimate if imports continue lower through much of the year.

Hawaii's banana production set another record-high in 2000, reaching 29.0 million pounds, up 18 percent from a year ago and increasing for the fourth consecutive year. New and maturing banana acreage, particularly of the Cavendish variety, was the major reason for increased production. In addition, weather was generally favorable for the 2000 crop, with no major wind damage. Growers planted 160 new acres in 2000 for a total of 1,710 acres and intend to plant another

Table 20--U.S. imports of fresh bananas, excluding plantains, by country, 1991-2000

Country	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Million pounds										
Costa Rica	1,513	2,104	2,034	2,154	2,112	2,138	2,103	2,405	3,536	3,001
Ecuador	2,458	1,976	1,679	1,733	2,054	1,871	1,925	2,381	2,578	2,152
Guatemala	650	843	833	970	1,022	1,114	1,020	1,443	1,114	1,518
Colombia	1,001	917	1,315	1,388	969	841	1,028	915	1,336	1,329
Honduras	918	905	941	1,096	1,285	1,410	1,243	831	184	608
Mexico	475	873	680	423	343	312	446	486	311	188
Panama	80	82	169	342	280	580	474	12	289	63
Other countries	24	85	96	38	13	60	78	153	121	28
World	7,119	7,785	7,745	8,144	8,077	8,327	8,317	8,627	9,469	8,886

Source: Bureau of the Census, U.S. Department of Commerce.

210 acres in 2001. Of the total acres in crop during 2000, 91 percent was harvested, 9 percent larger than in 1999. Average yields also rose in 2000. At 18,700 pounds per acre, this was up 8 percent from the year before.

Growers received an average of \$0.36 per pound for all banana varieties in 2000, up from \$0.35 a year earlier. Grower prices for Cavendish bananas, the major variety grown in Hawaii, averaged \$0.33 per pound, 1.0 cent more than in 1999. The farm value reached a record \$10.4 million due to increased production and higher prices. Production during the first 6 months of 2001 totaled 13.8 million pounds, down 4 percent from the same period a year ago, perhaps partly due to some reported insect and disease problems in some areas. Grower prices for all banana varieties averaged \$0.39 cents per pound during this time, 4 percent higher than last year.

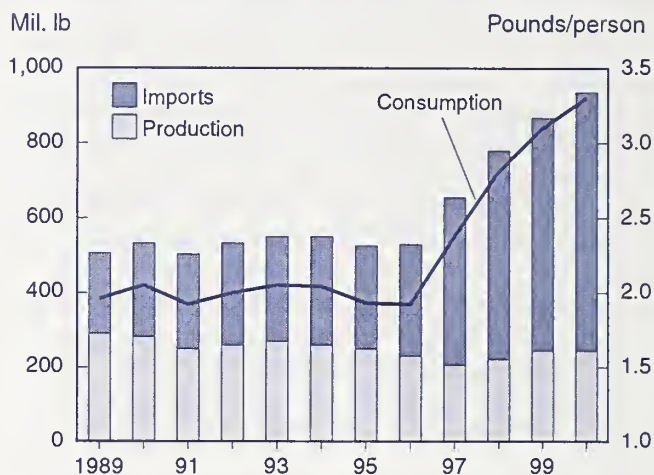
Pineapple Imports Down in 2000, Lowering Consumption

Imports of pineapples (fresh/frozen, canned, and juice) decreased in 2000 from a year ago. As a result, per capita consumption for 2000 is expected to decrease 4 percent to 12.9 pounds, fresh-weight equivalent. Per capita consumption of canned pineapple and pineapple juice were estimated to decrease 7 percent and 6 percent in 2000, while per capita use of fresh pineapples was estimated to increase 7 percent. While low relative to other pineapple uses, fresh/frozen consumption in 2000, at 3.30 pounds per person, is the highest on record. Consumption is projected to be down for canned pineapples in 2001, with imports running about 18 percent behind January through June 2000. Fresh and juice pineapple consumption, however, are expected to increase, with imports 14 percent and 5 percent above a year ago for the same period.

Imports of fresh pineapple increased 12 percent in 2000 from a year earlier, totaling 711.3 million pounds (table 21). Imports from Costa Rica totaled 574.7 million pounds, 14

Figure 13

U.S. fresh pineapple supply and consumption



Sources: National Agricultural Statistics Service and Economic Research Service, USDA.

percent higher than the previous year. In 2000, Costa Rica provided 81 percent of the fresh pineapples shipped into the U.S. market, a share that has nearly doubled over the previous 10 years. Honduras, Mexico, Ecuador, and Thailand rounded out the top five sources of fresh pineapples for the United States. Together these five major suppliers accounted for 99 percent of the imports.

Hawaii's 2000 pineapple crop, at 354,000 tons, was fractionally larger than the previous year and the largest crop since 1994. Acres harvested declined 1 percent to 20,700 acres. Most of Hawaii's pineapple crop is processed. In 2000, 66 percent went to processing, up slightly from 1999. Growers, however, received 3 percent more per ton for processing pineapples. At the same time, pineapples that went to the fresh market remained unchanged from 1999, but growers received almost 2 percent less per ton for fresh-market pineapples. The value of the 2000 crop totaled \$101.5 million, up only fractionally from the previous year.

Table 21--U.S. imports of fresh and frozen pineapples, by country, 1991-2000

Country	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
1,000 pounds										
Costa Rica	112,682	129,102	161,716	185,352	172,995	192,305	344,342	446,029	504,018	574,663
Honduras	56,290	69,346	58,861	63,977	73,375	60,126	54,460	59,414	73,976	72,570
Mexico	12,236	14,861	17,145	13,148	13,599	17,849	35,423	41,009	33,530	38,505
Ecuador	0	0	0	289	3,241	8,939	9,281	5,268	11,785	14,341
Thailand	2,851	4,270	5,977	6,782	4,000	6,179	5,299	6,505	4,707	6,255
Guatemala	20	850	680	748	1,202	877	333	1,018	3,846	1,681
Dominican Republic	71,332	55,566	38,606	23,396	7,488	9,106	1,106	331	64	1,568
Vietnam	0	0	0	0	0	0	0	0	344	497
China	1	106	15	8	0	2	0	0	258	442
Other countries	545	456	1,738	909	2,876	9,715	5,604	3,919	151	768
World	255,957	274,557	284,740	294,609	278,775	305,098	455,849	563,493	632,681	711,292

Source: Bureau of the Census, U.S. Department of Commerce.

Imports of canned and juice pineapple decreased in 2000 over the previous year. Canned imports totaled 702.2 million pounds, 7 percent lower than 1999 (table 22). Canned imports were lower from most major suppliers for the United States, with the exception of the Philippines, Indonesia, and the Republic of South Africa. Canned imports from Thailand, the second major source, was down 29 percent. As a result of increased world supplies during 2000, the United States imported fewer canned pineapples from Thailand, whose product is subject to high anti-dumping duties. Pineapple juice imports decreased 14 percent to 67.4 million single-strength gallons (table 23). Juice imports increased 4 percent from the Philippines, the number one source, but declined significantly from Thailand, Indonesia, Costa Rica, Mexico, and Brazil—also major suppliers. The Philippines accounted for 52 percent of pineapple juice imports in 2000, up from 42 percent in 1999. The combined share of juice imports from the four other major suppliers mentioned above, declined from 56 percent in 1999 to 47 percent in 2000. Increased juice imports from Kenya last year made it the fifth largest supplier to the United States.

Mango Imports Up in 2000

The popularity of mangoes is growing faster than all the major tropical fruit consumed in the United States, and almost all of what is consumed come from imports. Aiding in meeting continued strong domestic demand, mango imports totaled 518.3 million pounds in 2000, up 7 percent from the previous year (table 24). As a result, U.S. mango consumption increased 8 percent in 2000 from the previous year, to 1.80 pounds per person. Mexico is the primary supplier of mangos to the United States, accounting for over 75 percent of U.S. mango imports over the last 5 years. Other major suppliers include Ecuador, Brazil, Peru, and Haiti, all of which supplied larger shipments to the United States between 1999 and 2000. Imports from Mexico also increased but at a much slower rate. Because imports from Mexico will likely be down in 2001, domestic supplies will be limited and per capita consumption this year will likely decline, reversing eight consecutive years of growth. Cool winter weather in Southern Mexico resulted in a light fruit set, particularly on early production, which industry sources have

Table 22--U.S. imports of canned pineapples, by country, 1991-2000

Country	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
1,000 pounds										
Philippines	258,597	282,596	283,216	284,619	274,709	276,574	277,709	247,345	274,036	306,110
Thailand	270,076	384,948	379,245	339,949	219,508	172,067	167,347	109,955	257,288	182,349
Indonesia	30,063	36,299	42,093	53,819	61,580	120,862	145,840	108,676	144,897	146,322
Republic of South Africa	0	10	1,347	4,016	12,509	14,228	18,642	21,248	11,405	27,521
China	1,265	2,027	974	666	1,051	3,907	5,011	22,354	29,904	17,098
Malaysia	8,043	5,047	5,533	11,741	18,340	18,044	20,915	15,084	15,077	9,556
Singapore	4,316	5,466	6,777	5,200	2,050	3,777	6,247	7,880	6,655	5,821
Mexico	12,339	13,065	8,244	4,965	3,942	5,769	7,406	5,309	4,969	4,064
Vietnam	0	0	0	0	354	5,479	7,859	7,198	11,692	2,001
Costa Rica	2,159	2,649	301	3,767	3,379	350	17	137	16	490
Other countries	57,073	29,431	34,235	31,397	57,557	38,783	4,212	3,212	2,521	913
World	643,930	761,538	761,965	740,139	654,977	659,840	661,204	548,398	758,459	702,246

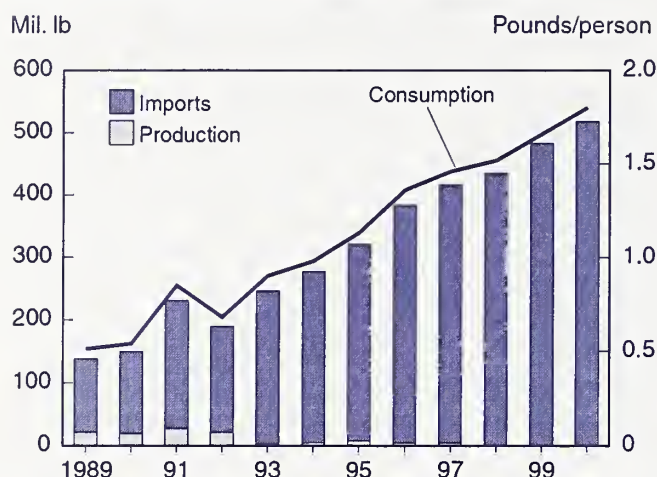
Source: Bureau of the Census, Department of Commerce.

Table 23--U.S. imports of pineapple juice, by country, 1991-2000

Country	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
1,000 Single-strength gallons										
Philippines	42,786	41,462	37,690	36,796	43,718	36,806	37,673	33,963	33,459	34,869
Thailand	31,538	35,364	41,769	27,121	30,440	31,131	23,045	17,203	29,564	22,496
Indonesia	708	288	871	3,423	3,951	6,771	8,888	5,244	9,771	6,260
Costa Rica	3,141	1,973	2,859	1,874	1,780	1,704	2,916	1,598	3,073	2,140
Kenya	0	0	110	0	0	0	279	0	0	417
Mexico	2,753	1,230	220	94	523	640	732	2,093	509	349
Brazil	0	299	79	52	0	11	0	43	904	298
Republic of South Africa	0	209	327	372	315	475	310	286	442	233
Honduras	1,067	1,142	984	112	48	970	472	114	84	66
Dominican Republic	3,910	1,230	1,437	729	141	2,358	1,105	59	11	64
India	0	0	0	0	0	0	0	4	24	49
Other countries	7,029	4,698	2,657	2,641	4,102	2,979	663	894	386	128
World	92,932	87,897	89,003	73,215	85,019	83,846	76,082	61,502	78,226	67,370

Source: Bureau of the Census, U.S. Department of Commerce.

Figure 14

U.S. fresh mango supply and consumption

Sources: National Agricultural Statistics Service and Economic Research Service, USDA.

predicted may be down 50 percent. Late blooms in some southern states could yield a heavy set, but overall production in Mexico is still expected short of last year's crop. U.S. mango imports from all sources thus far (January-June) in 2001 are down 23 percent from the same period last year, with imports from Mexico 31 percent fewer.

Commercial mango production in the United States has been dwarfed by imports since the mid-1970s. U.S. production is limited to southeastern Florida where production has been on a decline—from a peak of 30.3 million pounds in 1987 to 5.5 million pounds in 1997. Besides the destruction caused by Hurricane Andrew on Florida's mango production in 1992, growing competition for land and water from urban expansion and lowered U.S. tariffs on tropical fruit are some of the underlying factors behind the shrinking mango acreage in the State during the 1990s. Total acreage has remained at 1,700 acres with not many trees planted in the last few years. Because Florida's production is now limited to very few producers, the Florida Agricultural Statistics Service has not reported any production since 1997.

Increased Papaya Imports To Boost Consumption

Imports continue to gain importance in the U.S. papaya market, with its share of domestic supplies increasing sharply from 3.4 percent in 1980 to 75 percent in 2000. Since 1995, fresh papaya imports have continued to surpass commercial papaya production in the United States. Imports totaled 154.1 million pounds in 2000, up 5 percent from the previous year (table 25). Papaya consumption increased 10 percent that year, reaching 0.70 pound per person. Similar to mangoes, Mexico is also the major supplier of fresh papaya

Table 24--U.S. imports of fresh mangoes, by country, 1991-2000¹

Country	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
1,000 pounds										
Mexico	168,618	151,083	211,134	241,037	256,303	311,682	354,417	365,659	360,105	366,856
Ecuador	290	825	731	1,933	3,285	8,647	1,936	12,113	23,267	38,922
Brazil	2,281	3,769	6,972	4,860	6,516	10,773	11,950	15,562	28,040	37,401
Peru	482	6,696	6,060	7,864	8,506	9,897	7,378	8,007	25,181	27,111
Haiti	29,922	611	18,445	8,418	22,078	18,181	22,872	15,763	20,159	22,397
Guatemala	32	0	1,395	5,260	12,830	15,217	15,976	22,774	21,051	18,262
Nicaragua	0	0	0	395	1,650	2,081	1,708	3,236	1,495	3,409
Costa Rica	41	49	85	184	145	968	1,647	1,046	2,393	3,223
Venezuela	1,638	5,830	6,260	7,407	4,616	5,138	1,054	1,174	844	222
Dominican Republic	335	185	302	381	288	307	562	569	95	185
Other countries	393	187	322	237	371	329	285	263	508	315
World	204,032	169,236	251,705	277,976	316,589	383,219	419,785	446,166	483,139	518,303

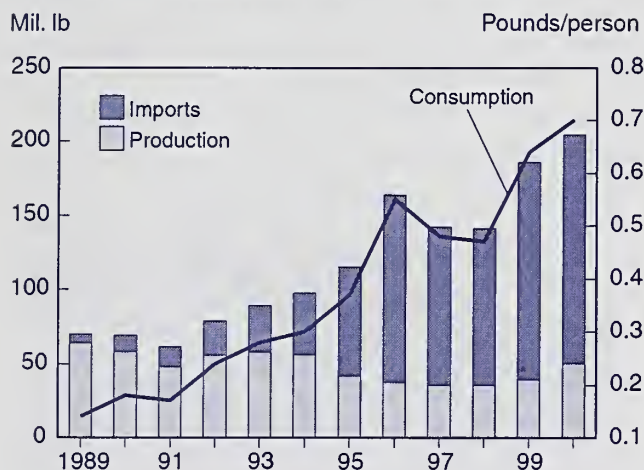
Source: Bureau of the Census, U.S. Department of Commerce.

Table 25--U.S. imports of fresh papayas, by country, 1991-2000

Country	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
1,000 pounds										
Mexico	8,927	18,615	21,533	32,996	67,156	110,661	88,233	87,438	123,307	121,527
Belize	82	1,347	4,297	3,962	1,438	5,347	7,971	9,397	8,485	12,269
Brazil	0	0	7	0	0	0	19	1,102	6,229	10,301
Dominican Republic	521	768	683	783	1,251	2,517	2,122	1,152	2,608	5,579
Jamaica	720	2,324	4,509	2,588	3,462	5,244	4,582	4,562	4,194	3,411
Costa Rica	9	4	11	796	19	2,134	3,164	1,848	1,592	714
Other countries	3,119	36	260	52	62	192	174	120	147	273
World	13,378	23,094	31,301	41,176	73,388	126,095	106,264	105,620	146,561	154,073

Source: Bureau of the Census, U.S. Department of Commerce.

Figure 15

U.S. fresh papaya supply and consumption

Sources: National Agricultural Statistics Service and Economic Research Service, USDA.

for the United States, accounting for 79 percent of all shipments in 2000. However, shipments from Mexico declined 1 percent from a year ago in 2000 but significant increases in shipments from smaller but important suppliers such as Belize, Brazil, and the Dominican Republic provided much of the growth in imports last year. Imports for 2001 thus far (January-June) are 16 percent higher, raising the likelihood of another year of increased per capita papaya consumption.

Hawaii's papaya crop increased in 2000 for the third consecutive year, following declining production from 1993 to 1997. Output totaling 54.5 million pounds was 29 percent above 1999. The number of harvested acres declined 15 percent in 2000 to 1,650 acres, but average yields were up 51 percent. Growers received 21 percent less for the value of fresh-market papayas last year compared with what they were paid in 1999. For the same period, prices for processing papayas remained the same. Over the last 3 years, approximately 9 percent of the crop was for processing. Production from January through July 2001 is 5 percent higher than last year, and grower prices for fresh papayas have averaged 15 percent lower.

Citrus Fruit Outlook

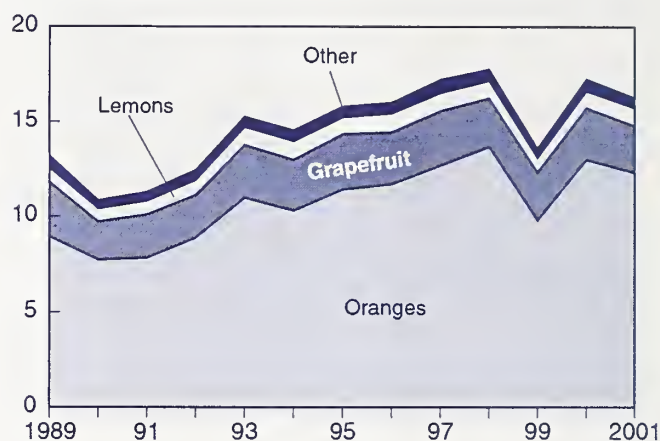
Low Prices Hit Much of Citrus Industry Despite Smaller Crop in 2000/01

The 2000/01 citrus crop is projected to be 6 percent smaller than the previous season, with reduced-sized crops for all citrus except lemons (table 26). Despite the smaller crop, sluggish demand brought lower prices to growers for grapefruit, processing oranges, and lemons. Both fresh orange and tangerine producers received higher prices than the previous season, but lower than 2 years previous when the crop was damaged by adverse weather conditions.

Drought conditions in Florida, the major citrus-producing State, reduced its citrus production 6 percent. Growers also were removing grapefruit trees from production due to low prices from poor demand in recent years, further decreasing the total citrus crop size. The size of California's citrus crop fell 9 percent due to lighter fruit set on orange and grapefruit trees than last season. Both the tangerine and lemon crops, however, were the largest in several years. Arizona's citrus crop fell marginally, although its major crop, lemons, increased in size. Texas was the only citrus-producing State to

Figure 16
U.S. citrus production

Mil. short tons



Year harvest was completed.

Source: National Agricultural Statistics Service, USDA.

Table 26--U.S. citrus fruit: Utilized production by crop and State, 1997/98-2000/2001 1/

Crop and State	1997/98	1998/99	1999/2000	2000/2001	1997/98	1998/99	1999/2000	2000/2001
	-- 1,000 boxes 2/ --				-- 1,000 short tons --			
All oranges	315,525	224,580	299,840	283,235	13,670	9,824	13,000	12,306
Arizona	1,000	1,150	1,100	1,000	38	43	41	38
California	69,000	36,000	64,000	57,000	2,588	1,350	2,400	2,138
Florida	244,000	186,000	233,000	223,000	10,980	8,370	10,485	10,035
Texas	1,525	1,430	1,740	2,235	64	61	74	95
All grapefruit	63,150	61,200	66,780	60,050	2,593	2,513	2,756	2,472
Arizona	800	750	450	450	27	25	15	15
California	8,000	7,300	7,000	6,500	268	244	235	218
Florida	49,550	47,050	53,400	45,900	2,106	2,000	2,269	1,951
Texas	4,800	6,100	5,930	7,200	192	244	237	288
All lemons	23,600	19,650	22,700	25,400	897	747	863	965
Arizona	2,600	3,450	3,100	3,400	99	131	118	129
California	21,000	16,200	19,600	22,000	798	616	745	836
Tangelos:								
Florida	2,850	2,550	2,200	2,100	128	115	99	95
All tangerines	8,200	7,400	10,150	8,800	360	327	451	387
Arizona	600	950	850	600	23	36	32	23
California	2,400	1,500	2,300	2,600	90	56	86	98
Florida	5,200	4,950	7,000	5,600	247	235	333	266
Temples:								
Florida	2,250	1,800	1,950	1,250	101	81	88	56
K-early citrus:								
Florida	40	80	110	40	2	4	5	2
U.S. total citrus 3/	--	--	--	--	17,770	13,633	17,288	16,300

-- = Not applicable.

1/ The crop year begins with bloom of the first year shown and ends with harvest.

2/ Net pounds per box: oranges-California and Arizona-75; Florida-90; Texas-85; grapefruit-California and Arizona-67; Florida-85; Texas-80; lemons-76; limes-88; tangerines-California and Arizona-75; Florida-95; tangelos, Temples, and K-early-90.

3/ Includes limes. Total for 2000/01 is forecast because final lime data are not available until Sept. 20, 2001.

Source: National Agricultural Statistics Service, USDA.

have a larger citrus crop, increasing 23 percent above a season ago. Both its orange and grapefruit crops were larger. In fact, its grapefruit crop was the biggest since 1982/83, before all the major freezes reduced the State's citrus production.

Orange Crop Smaller in 2000/01

The 2000/01 orange crop is expected to total 12.3 million tons, 5 percent lower than last season. If realized, however, this season's crop will be the fourth largest orange crop on record (table 27). About 83 percent of the crop is projected to go to processing this season. While this would be the same proportion as last season, the quantity going to processing would be 5 percent less due to this season's smaller crop. The good quality and large-size of this season's fresh oranges from California helped drive up exports, increasing 2000/01 projections to 689,000 short tons, 21 percent above last season and the highest in three seasons. As a result of the smaller crop and higher exports, consumption of fresh oranges this season is projected to decline to 1.5 million tons, 14 percent below last season and the second lowest in 10 years.

Orange production declined in all States except Texas. Florida's crop, which accounts for 73 percent of expected orange production in 2000/01, is anticipated to be 4 percent below last season. The decline in crop size is mostly attributed to difficult growing conditions, including an on-going drought and cold temperatures during part of the growing season. Arizona's orange crop, the smallest among the citrus-producing States, declined 7 percent from the previous season, but was the same size as the 1997/98 crop. Only Texas' orange crop was larger than a year ago. Cool weather at the beginning of its season slowed the maturity of Texas

oranges, and harvesting was extended by a month to make up for the late start.

California's crop accounted for the greatest drop in orange production in 2000/01. The smaller fruit set reduced the yields per tree and resulted in an expected 11-percent decline in crop size. Larger fruit size this year, however, somewhat offset the decline in average yields. The smaller set not only contributed to the larger size of the fruit, but also played a role in the very good quality of this year's fresh orange crop.

The smaller navel crop this season is responsible for most of the decline in California's orange production. Navel production is expected to be 15 percent below a season ago, although it is still considerably larger than the 1998/99 crop that was reduced due to freezing temperatures. The Valencia crop is expected to decline only 4 percent from a season ago. As a result, the navel crop accounts for 60 percent of California's orange crop this season compared with 63 percent a season ago. This means growers will be more dependent on their Valencia crop for cash receipts in 2000/01. If Valencia movement and prices continue to be as weak as last season, this could adversely affect growers' returns.

California fresh-market orange prices averaged \$9.74 per 75-lb box from November 2000 through July 2001, 32 percent higher than last year. This year's grower prices were among the highest in the last decade. Only during 1990/91 and 1998/99 growing seasons, when freezing temperatures greatly reduced California's crop, were prices higher than this season's average price. Higher prices so far this season resulted from the small fresh-market crop, as well as strong demand both in the domestic and international markets for large-sized, good quality fruit. The moderation in the growth of imported clementines this year also helped demand for

Table 27--U.S. oranges: Supply and utilization, 1988/89-2000/01

Season 1/	Supply		Utilization		Fresh con- sumption
	Pro- duction	Fresh imports	Processed	Fresh exports	
-- 1,000 short tons --					
1988/89	9,117	9	7,062	559	1,505
1989/90	7,873	13	5,763	576	1,547
1990/91	7,961	69	6,704	257	1,068
1991/92	9,015	17	6,837	546	1,649
1992/93	11,105	11	8,664	613	1,839
1993/94	10,329	18	8,075	604	1,668
1994/95	11,432	20	9,241	635	1,576
1995/96	11,426	25	9,227	560	1,664
1996/97	12,692	33	10,190	662	1,873
1997/98	13,670	44	11,012	711	1,991
1998/99	9,824	113	8,637	255	1,045
1999/00	13,000	53	10,750	569	1,734
2000/01 f	12,306	55	10,175	689	1,497

f = Forecast.

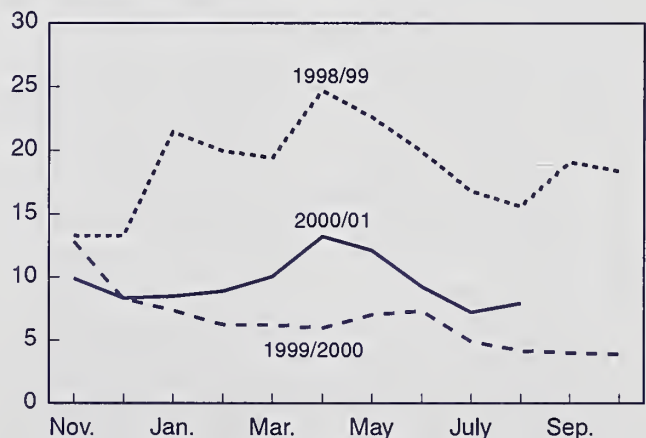
1/ Marketing season begins in November of the first year shown. Includes Temples before 1993/94.

Source: Economic Research Service and Foreign Agricultural Service, USDA.

Figure 17

Fresh-market orange prices in California

\$/75-lb box



Source: National Agricultural Statistics Service, USDA.

U.S. oranges. Clementine imports, which had been growing rapidly in the last several years, reducing demand for U.S. oranges and tangerines, increased less than 1 percent this season. Spain, the major source of clementines for the U.S. market, had a smaller crop this season, reducing the quantity available for export. Retail prices for navel oranges averaged \$0.69 a pound, 8 percent higher than last season. About 80 percent of the crop was harvested by April 1, leaving only the late variety navels for much of April and May. Valencia harvesting began in March.

Fresh orange exports increased 14 percent from November 2000 to June 2001 over the same period a year ago. As of June, 574,884 short tons of oranges were shipped, the largest amount on record. Among the top five markets (Canada, Japan, South Korea, Hong Kong, and Mainland China), exports increased the most to China. The United States had no report of any oranges shipped to China as recent as 1991/92. So far this season, China accounts for 5 percent of the exports, showing great potential for the future. Canada continues to remain the strongest market for U.S. oranges, importing 30 percent of the total. Strong sales to Canada, along with overall solid export growth this year, have been major factors in higher overall grower receipts. Export sales are increasingly contributing to a larger share of fresh orange grower prices. In 2000/01, exports are expected to account for 32 percent of total fresh orange sales, up from an average of 25 percent the previous three seasons.

Orange Juice Production Expected To Decline in 2000/01

Florida's 2000/01 orange crop is forecast to be 4 percent lower than last season. However, if realized, the crop would still be the third largest on record. The smaller crop brings the projected juice production 7 percent lower than last year, with Florida accounting for 94 percent of the total volume.

The early-mid season varieties totaled 5.8 million tons, 4 percent lower than last season. Harvesting began in late October with the crop in good condition at the beginning of the season. By November, however, drought conditions hit Florida and remained throughout most of the rest of the season. In December, very cold temperatures hit Florida around Christmas time, with some freezing temperatures. The combined adverse weather resulted in fruit size being the smallest on record. Further damage to the fruit, however, was limited. Picking of the early-mid season oranges was completed by the end of March. Valencia picking got underway in late February, with all harvesting turning over totally to Valencias by mid-March. Harvesting was running ahead of last season at this time, but a smaller proportion of the crop had been picked than two seasons previous. The Valencia crop is also expected to be 4 percent below the previous crop, for a total of 4.3 million tons. The Valencia harvest was almost completed by early July.

Orange juice production for 2000/01 is projected at 1.4 billion single-strength equivalent (sse) gallons, the third highest in history (table 28). Juice yields were higher than a season ago. At a projected average of 1.58 gallons (42⁰ Brix per 90-lb box), this year's frozen concentrated orange juice (FCOJ) yield is 2 percent above the 1999/2000 level. The yield for not-from-concentrate (NFC) orange juice was reported by the Florida Citrus Processors Association to be 6.50 single-strength gallons per 90-lb box, 5 percent above last season. Smaller-sized fruit means there are more fruit per box and results in more juice per 90-lb box. This season, 58 percent of the oranges are expected to be utilized in making FCOJ, with the remaining 42 percent going to NFC. Despite reduced production and imports this season, supply estimates are expected to drop only 4 percent due to record-high juice stocks at the beginning of this season. At 2.3 billion sse gallons, orange juice supplies are the third largest on record. Strong demand for NFC orange juice limited the projected decline in domestic orange juice consumption to less than 1 percent in 2000/01, to 5.83 gallons per person. Ending juice stocks are projected to be at a 3-year low, at 520 million sse gallons.

Despite the smaller crop in 2000/01, grower prices were down 19 percent from the previous season (table 29). Record beginning juice stocks reduced the price processors' were willing to pay for the early-mid season oranges, pushing down prices growers received. With slower FCOJ movement than a year ago, processors' demand did not pick up sufficiently for Valencia oranges to improve overall season-

Table 28--United States: Orange juice supply and utilization, 1988/89-2000/01

Season 1/	Begin- ing stocks	Pro- duction	Imports	Exports	Domestic con- sumption	Ending stocks 2/
Million SSE gallons 3/						
1988/89	212	970	383	73	1,258	233
1989/90	233	652	492	90	1,062	225
1990/91	225	876	327	96	1,174	158
1991/92	158	930	286	107	1,097	170
1992/93	170	1,207	324	114	1,337	249
1993/94	249	1,133	405	107	1,320	360
1994/95	360	1,257	198	117	1,342	356
1995/96	356	1,271	261	119	1,358	411
1996/97	411	1,437	257	148	1,454	502
1997/98	502	1,555	305	148	1,680	533
1998/99	533	1,236	346	150	1,438	527
1999/00	527	1,496	338	141	1,617	603
2000/01	603	1,389	274	134	1,612	520

f = Forecast.

1/ Season begins in December of the first year shown until 1994/95 when the season changes to begin in October.

2/ Data may not add due to rounding. Beginning with 1994/95 ending stocks, stock data include chilled as well as canned and frozen concentrate juice.

3/ SSE = single-strength equivalent. To convert to metric tons at 65 degree brix, divide by 1.40588.

Source: Economic Research Service and Foreign Agricultural Service, USDA.

Table 29--Monthly prices for processed oranges and frozen concentrated orange juice, 1998/99-2000/01 1/

Month	Processed orange 2/			Near-term futures contract 3/			Retail frozen concentrate 4/		
	1998/99	1999/00	2000/01	1998/99	1999/00	2000/01	1998/99	1999/00	2000/01
	-- \$ per 90-lb box --			-- \$ per lb solids --			-- \$ per 16 fl. oz of product --		
Oct.	3.27	--	--	1.15	0.89	0.70	1.66	1.78	1.86
Nov.	3.70	1.99	2.45	1.18	0.95	0.74	1.65	1.84	1.88
Dec.	3.93	2.99	2.30	1.09	0.93	0.80	1.68	1.82	1.88
Jan.	4.26	3.24	2.40	1.00	0.84	0.76	1.75	1.82	1.86
Feb.	4.39	3.28	2.60	0.93	0.85	0.76	1.78	1.81	1.91
Mar.	5.29	3.67	2.63	0.83	0.85	0.75	1.74	1.81	1.81
Apr.	5.33	4.50	3.75	0.85	0.82	0.74	1.78	1.82	1.87
May	5.45	4.75	4.00	0.85	0.82	0.78	1.76	1.80	1.89
June	5.45	4.55	3.50	0.89	0.85	0.77	1.76	1.80	1.93
July	--	3.80	--	0.81	0.80	0.81	1.81	1.88	
Aug.	--	--	--	0.93	0.74		1.83	1.88	
Sep.	--	--	--	0.93	0.71		1.83	1.84	
Simple average	4.56	3.64	2.95	0.95	0.84	0.76	1.75	1.83	1.88

-- = Not applicable.

1/ The marketing year for Florida orange juice changed in 1999/2000 to begin in October and end in September. Previously the year ran December through November.

2/ Equivalent on-tree price received by growers, Florida.

3/ Average of closing prices. 4/ 16 fluid ounces of 42 degree Brix product contain 0.52 pound of orange juice solids.

Sources: National Agricultural Statistics Service, USDA; New York Cotton Exchange; Bureau of Labor Statistics, U.S. Department of Labor.

average prices. Also driving the lower price for oranges was the low price of the near-term futures contracts for FCOJ. Since processors were able to purchase FCOJ at such low levels, they were able to pay growers lower prices for their oranges. Near-term futures prices averaged 9-percent lower this October through July than last season. Prices ranged from \$0.70-to 0.81 per pound solid throughout the season, considerably below the previous two seasons. The large stock situation and the movement away from FCOJ in favor of NFC contributed to the low prices. Unlike growers and futures prices, retail prices for a 16-fl. oz can of FCOJ was up during the October through June period of 2000/01. Prices ranged from a low of \$1.81 in March to a high of \$1.93 in June. NFC orange juice retail prices ranged from \$3.61 a gallon in November to \$5.17 in July. Prices averaged 26 percent below the previous season, according to ACNielsen Scantrack data. Data from the Florida Citrus Processors Association show that as of the end of July, Florida processors packed 15 percent more NFC this season than last. Most of the increase in the pack came from reprocessed single-strength juice; pack from fruit declined 3 percent from the previous season.

Orange juice exports declined 18 percent from October 2000 through June 2001 from the same time last season. Exports fell 29 percent for FCOJ and 7 percent for NFC. Canada, the most important NFC market and fifth most important FCOJ market, increased its imports of both types of juice during this time. NFC exports to Canada increased 3 percent and FCOJ exports increased 41 percent. As recently as 1994/95, Canada was the leading market for U.S. FCOJ exports. However, Canada's purchases of frozen concentrate declined as not-from-concentrate became more pop-

ular. Canada has an advantage for NFC shipments over most other major markets because of the proximity of Canada to the United States and its major Northeastern and Midwestern markets. NFC is more costly to ship than FCOJ, and the nearness of the Canadian market lowers the cost of shipping NFC relative to other major export destinations. Mexico became the third biggest export market for NFC during the 1998/99 season. In 2000/01, it was the second largest market, even though shipments fell 37 percent from the previous season. Shipments also declined to the European Union and Japan, the top FCOJ markets. The continued weak Euro and the slow recovery of the Japanese economy continue to hamper these countries' imports.

USDA forecasts Brazil's FCOJ production for 2001 to decline 8 percent from a year ago to 1.5 billion sse gallons, the lowest in 5 years (table 30). Exports, projected at 1.7 billion sse gallons, would be the lowest in 3 years. The 4-percent decline in exports is buffered by the large juice inventory coming into the 2001 season. To meet export demand, ending stocks are projected to decline 49 percent. These stocks, the lowest since 1994, could create problems for next year's juice supply if weather conditions do not improve and production decreases. The lower supplies in both Brazil and the United States, the two largest orange juice producers, could put upward pressure on world orange juice prices.

Brazil shipped about 70 percent of its FCOJ and other frozen orange juice exports to the European Union (EU) from July 2000 through April 2001. While the quantity shipped fell 3 percent from last season, the share going to the EU increased as a result of the reduced supply.

Table 30--Brazilian FCOJ production and utilization, 1991-2000

Season 1/	Beginning stocks	Production	Domestic consumption	Exports	Ending stocks
Million SSE gallons 2/					
1991	134	1,213	28	1,142	177
1992	177	1,334	25	1,390	96
1993	96	1,610	25	1,532	148
1994	148	1,572	25	1,546	148
1995	148	1,583	31	1,482	218
1996	218	1,525	27	1,476	240
1997	177	1,954	22	1,778	330
1998	331	1,665	26	1,600	370
1999	370	1,912	22	1,821	439
2000	439	1,659	22	1,743	332
2001f	332	1,525	22	1,666	169

f = Forecast. 1/ Season begins in July of year shown.

2/ SSE=single-strength equivalent. To convert to metric tons at 65-degree Brix, divide by 1.40588.

Source: Foreign Agricultural Service, USDA.

Shipments to the United States were off by 30 percent. Lower supplies, large beginning stocks in the United States, and the good quality of domestic fruit reduced U.S. processors' demand for Brazilian juice for blending purposes. The unit value of Brazilian juice to its top four markets ran about 28 percent behind last year's value. Again weak demand and the weak Euro affected prices Brazilian processors received for their product.

Grapefruit Production Lowest in 9 Years

The U.S. grapefruit crop is forecast to total 2.5 million tons, the lowest quantity since 1991/92 (table 31). The 10-percent decline is largely attributed to fewer trees and small fruit in Florida and light fruit set in California. Florida's crop fell 14 percent from last season and accounted for 79 percent of this year's total grapefruit crop, a smaller share than in past seasons. The long period of dry weather, along with colder than normal temperatures during the winter, slowed fruit maturity. As a result, fruit use fell behind a year ago, and there was a large amount left by July, with only a few packinghouses and processors left open. As a result, the Florida Agricultural Statistics Service is expecting that there will be economic abandonment of grapefruit this year.

Florida grower prices fell 52 percent this season to an average of \$3.99 per 85-lb box (table 32). While prices were high last season due to processors' demand to build grapefruit juice stocks, this season's price is also 26 percent lower than the 1998/99 season but was 27 percent higher than the 1997/98 season. Prices were driven down by the price of processing grapefruit. Grapefruit marketed for processing use accounted for 64 percent of this season's crop. While this is lower than last year, it is higher than the two previous seasons. Growers received an average of 3 cents per 85-lb box this season for processing grapefruit, down from \$1.88 per box last season. Prices appeared to improve as the sea-

Table 31--U.S. grapefruit: Supply and utilization, 1988/89-2000/01

Season 1/	Supply		Utilization		
	Production	Fresh imports	Processed	Fresh exports	Fresh consumption
-- 1,000 short tons --					
1988/89	2,844	4	1,449	587	812
1989/90	1,978	5	1,096	337	550
1990/91	2,256	8	1,015	513	736
1991/92	2,224	12	975	506	755
1992/93	2,791	14	1,518	486	801
1993/94	2,661	16	1,377	506	794
1994/95	2,912	14	1,597	536	793
1995/96	2,718	17	1,400	551	784
1996/97	2,885	14	1,532	529	838
1997/98	2,593	17	1,380	432	798
1998/99	2,513	18	1,300	470	761
1999/00	2,756	7	1,637	433	692
2000/01f	2,472	22	1,580	452	463

f = Forecast

1/ Marketing season begins in September of the first year shown.

Source: Economic Research Service and Foreign Agricultural Service, USDA.

son went along, but peaked in February at \$1.01 and then declined to the 33 to 57 cents-per-box range. The late maturity of this year's crop led to fruit processing occurring later into the season than usual. Prices for fresh grapefruit also were considerably lower than the previous two seasons. Small fruit and late maturity affecting the fruit sweetness early in the season reduced consumer demand.

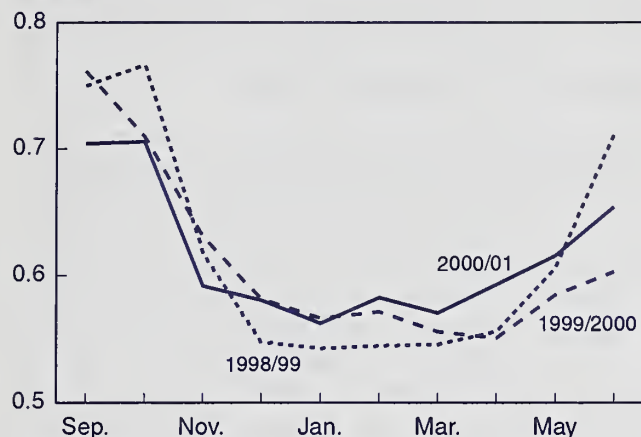
As a result of the smaller crop this season, fresh grapefruit consumption is projected to decline 33 percent during September 2000 through July 2001, declining for the third consecutive season. Consumers faced fractionally higher retail prices for fresh grapefruit this season compared with last, however, they paid slightly less than two seasons ago. Prices followed their usual cycle. They started off high early in the fall when only a small quantity of Florida grapefruit is available. Prices then declined by November when the harvest is in full swing, and increased again in May through the summer when the Florida grapefruit season is replaced by the much smaller California and Arizona grapefruit crop. Possibly due to the size of much of this season's crop, retail prices began at a much lower price than the two previous seasons. Prices were more similar to the recent past by December.

The United States grapefruit industry is becoming increasingly dependent on its export markets to sell their fruit as domestic demand stagnates. This season, an estimated 18 percent of the total grapefruit crop will be exported. Fresh grapefruit exports increased 2 percent from September 2000 to June 2001 over the same period last season. The level of exports, however, has not returned to the quantity exported in the mid-nineties. Exports to Japan, the largest market for U.S. grapefruit, remained unchanged from a year ago and higher than levels during the height of the Asian economic

Figure 18

Average retail prices for grapefruit

Cents/lb



Source: Bureau of Labor Statistics, USDA

crisis between 1996 and 1998. This season there was also strong growth in Europe, with exports increasing to France, the second largest market, Germany, United Kingdom, and Belgium. Exports, however, fell slightly to the Netherlands, an important destination because of its role in transshipping fruit throughout Europe. Exports to Canada, the third

largest market, continued to decline, as they have the previous six seasons.

An estimated 1.6 million tons of grapefruit went to processing this season, 3 percent lower than last season, but higher than the previous 5 years. Grapefruit juice yields for frozen concentrated grapefruit juice (FCGJ) averaged 1.28 gallons per 85-lb box, up 8 percent from a season ago. Similar to the situation with this year's oranges, smaller fruit result in more fruit filling a box and increasing the juice yield per box. Juice yields for chilled juice increased 4 percent, with the seasonal average of 5.17 gallons per box as of early July. Juice movement was up this year for FCGJ but down for chilled juice. Retail movement was sluggish for both, but bulk movement increased for chilled and FCGJ. Export sales were strong this season as of July 7, with the volume of concentrated juice shipped to export markets rising 25 percent above a season ago, and chilled increasing 3 percent, according to industry data. While juice pack was down, the greatest decline from last season was in the not-from-concentrate category. Red grapefruit accounted for 54 percent of the concentrated juice stock on hand at the end of July, white grapefruit made up the remaining 46 percent. Overall ending juice stocks were up 3 percent at this time. Ending stocks for chilled juice, however, are running 26 percent behind last season as of the end of July.

Table 32--Grapefruit: Average monthly equivalent on-tree prices received by growers, Florida, 1997/98-2000/01

Month	Fresh grapefruit				Processing grapefruit				All grapefruit			
	1997/98	1998/99	1999/00	2000/01	1997/98	1998/99	1999/00	2000/01	1997/98	1998/99	1999/00	2000/01
-- Dollars per 85-lb box --												
Sep.	--	--	--	--	--	--	--	--	--	--	--	--
Oct.	4.57	6.20	9.27	5.41	-0.31	0.49	-0.37	-1.73	3.65	4.59	6.87	4.17
Nov.	3.36	4.89	6.11	4.13	-0.71	-0.96	0.83	-0.62	1.93	2.94	4.30	2.69
Dec.	3.77	4.22	6.63	3.31	-0.59	-0.10	2.42	-0.29	2.10	2.36	4.79	2.03
Jan.	3.27	4.39	7.54	2.93	-0.29	0.31	2.87	0.18	1.53	2.41	4.95	1.64
Feb.	3.46	4.88	6.62	3.48	-0.13	0.43	2.87	1.01	1.19	2.09	4.31	2.01
Mar.	3.11	5.07	6.34	3.49	-0.30	0.49	3.00	0.57	0.70	1.88	3.79	1.50
Apr.	2.97	5.43	5.76	3.91	-0.40	0.70	2.80	0.33	0.65	2.14	3.32	1.27
May	2.29	6.92	4.29	4.87	-0.40	0.61	2.30	0.51	0.34	2.19	2.61	0.96
June	--	--	4.22	4.39	--	--	0.20	0.33	--	--	1.37	0.94

-- = Insufficient marketing to establish price.

Source: National Agricultural Statistics Service, USDA.

Tree Nuts Outlook

Tree Nut Crop Likely To Be Higher in 2001

The total tree nut crop is expected to increase in 2001 after declining 15 percent in 2000 from the previous year. Indications for a larger crop are based on the alternate bearing nature of nut trees. This year should be an "on year" for most of the major crops, almonds, walnuts, hazelnuts, pecans, and macadamia nuts. Only the pistachio trees will be on an "off cycle." The California Agricultural Statistics Service (CASS) has made preliminary estimates for the 2001 almond crop, the largest of the tree nut crops produced in the United States. According to CASS, the 2001 almond crop is expected to be a record 850 million pounds (shelled basis), up 21 percent from a year ago. Since the almond crop accounted for 61 percent of the entire domestic nut crop in 2000, the anticipated record crop will likely drive the overall nut crop above last year.

Based on the Walnut Objective Measurement Survey by the California Agricultural Statistics Service (released August 31, 2001), California walnut production in 2001 is forecast at 280,000 tons, in-shell basis, up 13 percent from last season's production. Based on the California Pistachio Objective Measurement Survey, also released on August 31, 2001, California pistachio production in 2001 is forecast at 200 million pounds, down 18 percent from a year ago. Production of hazelnuts in Oregon, which accounts for nearly all of U.S. hazelnut production, is forecast at 48,000 tons this year, up 113 percent from a year ago, based on the Oregon Objective Measurement Survey.

Although grower prices are expected to decline as a result of the expected large crops, grower revenues should be higher this year as increases in production will more than likely offset the declines in prices. The recent release of information about the health benefits of nuts may also advance grower prices if the result is to stimulate demand beyond recent levels. A positive response by consumers to the health benefits of a commodity has occurred in other produce industries, increasing demand at least temporarily.

The 2000 tree nut crop totaled 1.1 million tons (in-shell equivalent), 15 percent lower than last year. Production declined for all major nut crops except pistachio nuts. Pecan production fell 48 percent, walnut and almond production 16 percent, and macadamia nuts 12 percent. Pistachio nut production, however, almost doubled from last year. The value of the 2000 crop fell less than 1 percentage point from the previous year, totaling \$1.5 million. The record-high value of

the pistachio crop coupled with only slightly lower almond prices kept revenues high despite the smaller crop size.

Record Pistachio Crop in 2000

Pistachio nut production increased to 243 million pounds (in-shell basis) in 2000, up from 123 million pounds the previous year, setting a record. A 5-percent increase in bearing acres along with 2000 being the "on cycle" in the pistachio trees' alternate-bearing cycle contributed to the large crop. Pistachio prices averaged \$0.98 a pound in 2000, 26 percent less than the year before. Although prices were lower, the record-sized crop boosted grower revenues to a record \$238.1 million, 46 percent above 1999 and 23 percent above 1998. According to the industry, about half the pistachio crop is exported. Industry data show exports from September 2000 through June 2001 increased 38 percent over the previous year. The leading destination for U.S. pistachios is the European Union (EU), accounting for 50 percent of all shipments. Germany, alone, accounted for 20 percent of U.S. exports. The other major EU countries receiving U.S. pistachios included France, Italy, Belgium, and Luxembourg. The majority of the nuts shipped are open in-shell. Hong Kong accounted for 21 percent of all exports to date this year. Hong Kong imports both closed and open in-shell nuts. Other important markets include Canada and Japan. Due to the greater quantity available and lower grower prices, exports increased to all these markets.

Smaller Almond Crop Pushed Up Prices

The almond crop, totaling 703 million pounds (shelled basis) in 2000, decreased about 16 percent from the previous year's record high. Beginning stocks were the highest in 5 years, pushing up total supply to just 5 percent below the previous marketing year. As a result, domestic shipments rose almost 1 percent from a year ago and exports were 5 percent higher. To meet these needs, ending stocks for the 2000 crop are estimated to be 65 percent below a year ago, the lowest level in a long time.

Almond grower prices increased 17 percent in 2000, to \$1.01 per pound, due to the smaller crop and strong demand. The higher price resulted in the value of the crop declining by only 1 percent from 1999, to \$682 million.

Exports of shelled almonds to the EU were down 1 percent this year, with shipments falling to Germany and Spain, the two largest markets. Exports to Japan, the third largest market, however, rose 14 percent. Shipments also were larger to the United Arab Emirate, Saudi Arabia, South Korea, Mexico, and India. Shipments of in-shell almonds increased

33 percent over a year ago. India remained the primary destination for in-shell almonds. However, despite a 17-percent increase in shipments, India's share of U.S. almond exports fell to 67 percent, down from 76 percent last year. India's decline in its share of the market is attributed to the rapid growth of China's market, with exports destined to China increasing 108 percent over a year ago.

Walnut Crop Down, Prices Highest in 3 Years

The 2000 walnut crop was 16 percent lower than the year before, but 5 percent larger than the 1998 crop. The 2000 crop was an "off year" in the walnut production cycle, similar to 1998. Bearing acres increased 1 percent in 2000, to 193,000 acres, but were the same amount as 1998. Good growing conditions in 2000 improved yields over 1998, with 5-percent higher yields, at 1.24 tons (in-shell basis) per acre. Due to the size of the 2000 crop, shipments for the 2000/01 marketing year decreased from the previous year for both in-shell and shelled walnuts. According to the Walnut Marketing Board, in-shell shipments declined almost a third, while shelled shipments declined 5 percent. Exports declined to all the major export markets, except the top Asian markets. Shipments were up in 2000/01 to both Japan and Australia for shelled walnuts.

Walnut prices rose 37 percent in 2000 because of the small crop. The season-average grower price of \$1,210 per ton was higher than the previous 2 years, but was 15 percent lower than 1997. With the increase in price greater than the decline in production, the 2000 crop value for utilized production totaled \$238 million, a 15-percent increase over 1999.

Crop Size and Value Decline for Hazelnuts, Macadamias, and Pecans

Similar to all the other nut crops, excluding pistachios, the quantity of hazelnuts, macadamia nuts, and pecans was lower in 2000 than 1999 due to the alternate-bearing nature of the trees. Crop size declined 40 percent for hazelnuts, 11 percent for macadamia nuts, and 48 percent for pecans.

Bearing acreage for macadamia nuts in Hawaii declined by 6 percent. Acreage planted to macadamia trees has been on a downturn since they peaked in 1995. Low prices since 1998 have caused growers to abandon acreage or replant to coffee and other crops. Crop size in 2000 was further ham-

pered by adverse weather conditions throughout Hawaii. Due to poor growing conditions, yields fell to 2,820 pounds per acre (in-shell basis), the lowest since 1995. Even with the smaller crop, prices fell in 2000 to \$0.59 a pound, 12 percent below 1999 and the lowest since 1978. As a result, crop value was also down this year. Total crop value for macadamia nuts declined 22 percent, to \$30 million.

Hazelnut bearing acres fell in both Oregon and Washington for the second consecutive year. There are, however, still more acres producing hazelnuts than there were prior to 1996. As a result of the decline in bearing acreage and with 2000 an "off year" in the alternate bearing cycle, hazelnut production fell to 24,000 tons, down from 40,000 tons in 1999, but up 55 percent from the 1998. Grower prices for hazelnuts remained virtually unchanged between 1999 and 2000. In 1999, growers received \$890 per ton of hazelnuts and in 2000, they received \$891. With the 40-percent smaller crop and the stable price, total revenues from hazelnuts fell 40 percent in 2000, to \$21 million.

U.S. hazelnut exports were up for the 2000/01 marketing year. Even though the U.S. crop was smaller this year than a year ago, smaller crops from the world's leading hazelnut producers, Turkey, Italy, and Spain, increased demand for the U.S. nut. Exports rose 45 percent above last year and 54 percent above 2 years ago. Exports more than doubled to the two major markets, Hong Kong and Germany. They were also up to Canada, the next largest market, but fell by half to China.

The pecan crop was sharply reduced in 2000. While both improved varieties and native and seedling varieties declined from a year ago, the decrease was strongest for the native and seedling variety, with production off 74 percent. Even with the sharp decline, 2000 production of this variety was 43 percent bigger than in 1998. While prices were strong in 2000, they did not increase enough to bring the total crop value above a year ago. Crop value in 2000 declined 28 percent, to \$239 million.

Pecan exports rose 6 percent for the 2000/01 marketing year. Exports rose to Canada and the United Kingdom, the two biggest destinations for U.S. pecan exports. Exports to Mexico, the third largest U.S. market, declined.

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Demographic Profile of Apple Consumption In the United States

Agnes Perez, Biing-Hwan Lin, and Jane Allshouse¹

Abstract: U.S. per capita consumption of apples has risen over the past three decades, with consumption of processed apple products exceeding consumption of fresh apples in the last 20 years. While fresh apple consumption remained fairly stable, the largest increases in processed per capita use during the 1990s were for juice, frozen, and dried products. Using data from the U.S. Department of Agriculture's (USDA) 1994-96, and 1998 Continuing Survey of Food Intakes by Individuals, this article examines the distribution of fresh and processed apple consumption in the United States. The analysis suggests that fresh apple use was most popular in the Western region of the United States, while processed apple use was strongly favored in the Northeast. Most apples are still consumed at home. Males generally consume more apples than females. Fresh apple consumption was greatest among Hispanic consumers and people of other races, while processed apple products were more popular among black, non-Hispanics. Apple juice, the largest component in the processed apple market, was most popular among children 2 to 5 years of age, especially among boys. As they got older, the importance of apple juice in their diets diminished and the popularity of the product shifted more strongly towards girls.

Keywords: Apple, consumption, per capita use, distribution, fresh, juice, dried, applesauce, baked products, frozen meals.

Introduction

Apple production in the United States has come a long way since the early American settlers brought with them seeds and some grafted trees of European varieties and introduced apples to the eastern coast of North America. Through careful selection and breeding of both wild and cultivated varieties, today's apples are quite different from those that were first introduced. Produced commercially in nearly all of the United States, apple production averaged 20 percent higher during the 1990s compared with the previous decade. USDA's apple production data date back to 1889, when approximately 6.0 billion pounds were produced. Production was generally on a declining trend beginning in the 1910s, with average production bottoming out during the 1940s and 1950s at over 4.0 billion pounds. By the end of the 20th century, production had grown to over 10.0 billion pounds. Data on production for farm household use was first reported in 1909. During the 1910s, about one-fourth of production reported as having value was consumed on farm households. This share has declined

over the years to about less than 1 percent during the early-to-mid 1960s when it was last reported.

According to per capita disappearance data compiled by the USDA's Economic Research Service (ERS), apple demand in the United States has risen since the 1970s, reversing the downward trend experienced during the first half of the 20th century (fig. A-1). During the 1990s, domestic per capita disappearance of apples for all uses averaged much higher than the previous six decades, approaching peak disappearance levels achieved during the first 10 years of the 20th century. A combination of factors has likely contributed to increased per capita apple use in the United States, including production expansion, rising incomes, a growing and more diverse population, new varieties and products that better meet changing consumer lifestyles and preferences, and more recently, increased awareness of the importance of fruit in a healthy diet. However, due to lack of consumer research in this area, little is known about the demographics of fresh and processed apple consumption. Who consumes apples? What proportion of fresh and processed apples are purchased for at-home versus away-from-home meals? Has the increasing Hispanic population influenced fresh apple demand?

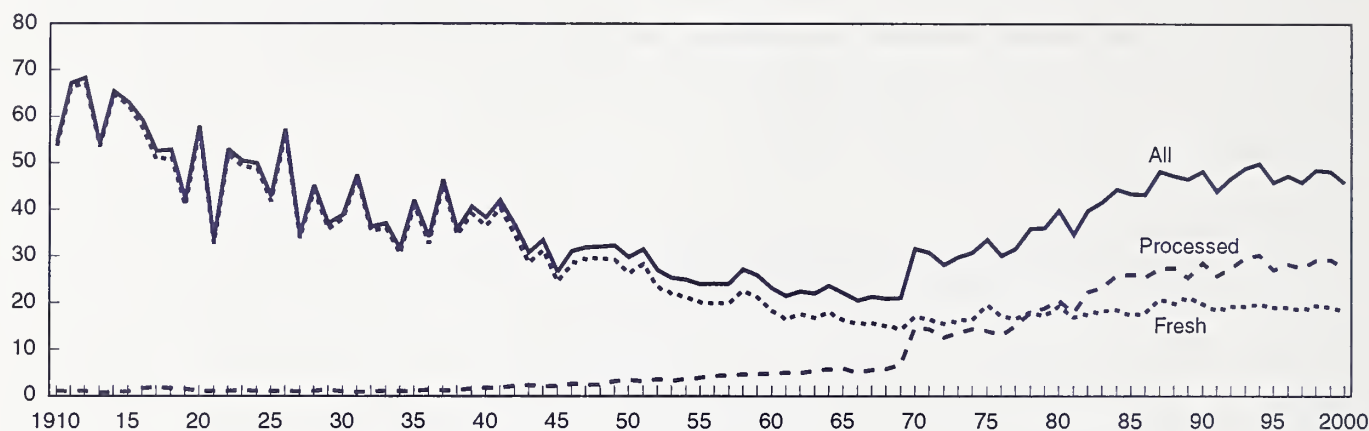
This article utilizes USDA's most recent individual food consumption survey to describe the distribution of fresh and

¹ Perez is an agricultural economist with the Market and Trade Economics Division, the others are economists with the Food and Rural Economics Division, all within USDA's Economic Research Service. The authors gratefully acknowledge the comments from James R. Cranney, Jr. of the U.S. Apple Association.

Figure A-1

Apple consumption in the United States

Pounds per person, fresh-weight basis



Source: Economic Research Service, USDA.

processed apple consumption in the United States. Apple consumption was analyzed based on the following socioeconomic and demographic characteristics: food source, region of the country, urbanization, racial or ethnic make-up, income class, age, and gender. The information derived from this article attempts to fill some of the information gaps in the area of consumer research for apples.

Data and Methodology

USDA has conducted periodic surveys of household and individual food consumption in the United States since the 1930s (see box). The most recent surveys, the 1994-96 and 1998 Continuing Survey of Food Intakes by Individuals (CSFII)², conducted by USDA's Agricultural Research Service (ARS), provided the basis for this article. Each year of the 1994-96 data set comprises a nationally representative sample of non-institutionalized persons residing in 50 States and Washington, D.C. The 1998 CSFII was a supplemental survey to the 1994-96 CSFII. The supplemental survey was strictly focused on children (see the box for more details).

In the CSFII, two nonconsecutive days of dietary data for individuals of all ages were collected 3 to 10 days apart through in-person interviews using 24-hour recalls. The 1994-96 CSFII data set includes information on the food and nutrient intakes of 15,303 individuals, while the 1998 CSFII data set includes 5,559 children who were up to 9 years of age.

The respondents provided a list of foods consumed as well as information on where, when, and how much each food was

eaten. Standardized probes were used to collect details on food descriptions and amount of food eaten. The location where the food was purchased was coded into several categories. For each respondent, an array of economic, social, and demographic characteristics were also collected. This rich database enables researchers to estimate the market/consumption distribution of a food by numerous delineations.

Domestic Apple Demand Rising

Apples are the third most valuable fruit crop in the United States, next to grapes and oranges, with 2000 farm cash receipts of \$1.5 billion, 11 percent of all fruit and nut farm cash receipts. Considered by Americans as a traditional fruit crop, nearly 100 varieties are now commercially produced in the United States, with 15 of the most popular varieties accounting for over 90 percent of production. Next to oranges, apples (frequently alternating with grapes) are the Nation's second most popular consumed fruit (fresh and processed uses combined). According to ERS disappearance estimates, per capita fruit consumption in the United States was 284.3 pounds, fresh-weight equivalent, in 1999, of which 48.1 pounds were apples. Consumption is estimated to decline to 45.6 pounds of apples per person in 2000 as a result of reduced utilized production in the fall of last year.

U.S. apple consumption (fresh and processed combined) generally trended upward over the past three decades. While U.S. fresh fruit and vegetable consumption experienced significant growth since the 1970s, per capita fresh-market apple use has remained relatively flat. The fresh-market apple sector lagged behind other fresh produce product sectors in meeting the growing demand for fresh-cut products, especially during the past decade.

Another factor that may have contributed to the leveling of fresh-market apple consumption in the United States is

² U.S. Department of Agriculture, Agricultural Research Service, 1998. 1994-96 Continuing Survey of Food Intake by Individuals and 1994-96 Diet and Health Knowledge Survey. CD-ROM. Available from National Technical Information Service, Springfield, VA.

increased competition from imports of other fruits. Increased fruit imports such as grapes, peaches, nectarines, and plums from Chile (mostly during November through March) beginning in the mid-1980s has expanded out-of-season fruit supplies domestically. While perhaps contributing to boost consumption of many U.S. summer fruits (by extending the season), the increase in choices of fruit for consumers during the winter months, besides the traditional apples, pears, and oranges, may have shifted some consumption away from these commodities.

Also, supermarkets across the United States now offer more variety of items in their produce department in response to consumers' demands for added convenience, healthy diets, and gourmet and ethnic items (Kaufman, et. al.). The number of stockkeeping units (SKU's) sold in the produce department increased from 173 in 1987 to 225 in 1997 (Litwak, 1988 and 1998). For example, the growing demand for non-traditional fruit products such as tropical fruit, reflecting in part the growing immigrant population in the United States and increased interest among Americans to try new products, has led to increased imports of these products and the greater presence of these products in supermarket produce departments. Growth in average per capita consumption for fresh mangoes, pineapples, and papayas during the 1990s relative to the 1980s was substantial and has surpassed those for most domestically-produced fruit.

Processed apple demand has trended higher, exceeding fresh apple demand in the last 20 years. During the most recent 3 years (1998-2000), average fresh use increased 4 percent over the 1978-80 period (to 18.8 pounds per person annually), while average processing use has risen 50 percent, to 28.6 pounds. ERS estimates suggest the largest processed use of apples is for juice (74 percent), followed by canned (17 percent), dried (4 percent), frozen (3 percent), and other (2 percent). Per capita consumption for all these processed products averaged higher during the 1990s compared with the previous decade, with the largest increases in juice, frozen, and dried products (fig. A-2).

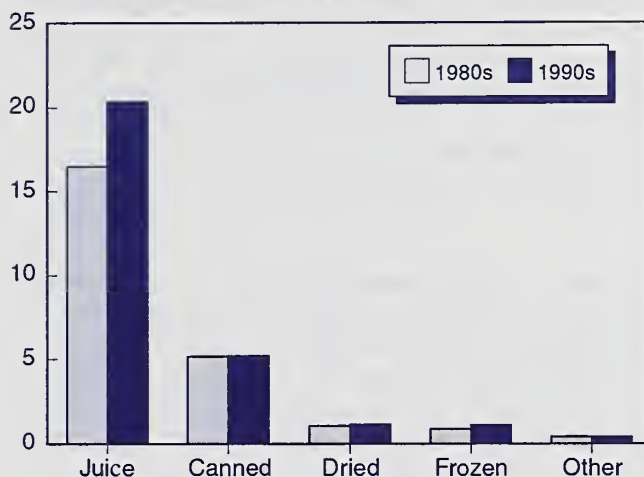
“At Home” Consumption Still Dominates

Despite the growing trend in dining out among U.S. households over the last two decades, Americans still consume the vast majority of apple and apple products at home (fig. A-3). Approximately 94 percent of fresh apples were consumed at home, including fresh apples that were packed or prepared at home, but eaten elsewhere. In this study, the “at home” and “away from home” delineation is based on where a food was obtained or prepared, not where it was consumed. Food consumed at home is generally purchased at a retail store such as a supermarket, grocery store, or convenience store. Food consumed away from home is generally purchased from foodservice establishments, but can also be obtained in

Figure A-2

U.S. apple consumption by processed product categories

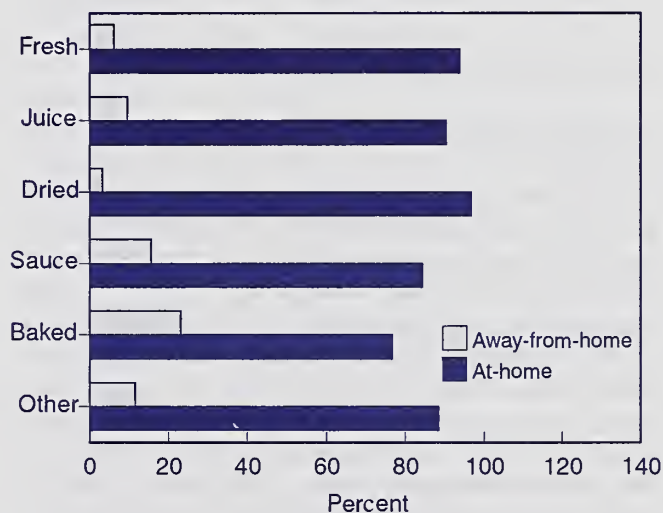
Pounds per person, fresh-weight basis



Source: Economic Research Service, USDA.

Figure A-3

Consumption of apples by location



Source: Economic Research Service, USDA.

such places as cafeterias, community feeding programs, or child/adult care centers. Among the various food products that contain apples as an important ingredient, dried apples, which also includes apples in cereal products, were most frequently consumed (97 percent) at home while baked apple products such as dessert items were the least frequently consumed at home (77 percent). On average, about 89 percent of all processed apple products were consumed at home.

Western Region Led in Per Capita Fresh Apple Consumption, Northeastern Region Topped Processed Apple Product Use

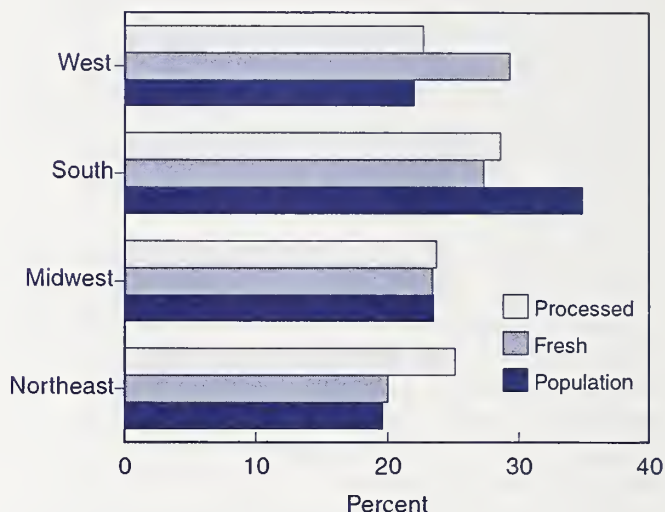
The CSFII data present distinct regional patterns in the consumption of apple products. Among the four-Census defined regions, the Southern region had the largest representation of consumers (35 percent of the population), followed by the Midwest (24 percent), West (22 percent), and Northeast (20 percent) regions (table A-1). Consumption of fresh apples was favored more in the West and less in the South, perhaps partly due to the geographic concentration of production.

The West is a major production region for apples, particularly for the fresh market, whereas the South is the smallest producing region. Higher transportation costs may be required to bring apples into the Southern region where local production for the fresh market is relatively low, and the resulting higher retail prices may be discouraging consumption. With a 22-percent share of the U.S. population, the Western States accounted for 29 percent of fresh apple consumption (table A-1). By dividing the consumption share by the population share, we can compare relative consumption as shown in table A-2. For example, figures in table A-2 show that relative to the national average, per capita fresh apple consumption in the Western States is 33 percent higher, while in the South per capita consumption is 22 percent lower. Table A-2 also indicates that Westerners consume 71 percent more fresh apples than Southerners.

Per capita consumption of processed apple products was strongest in the Northeast region and weakest in the South (table A-1 and fig. A-4). Important apple-producing States in the Northeast, such as New York and Pennsylvania, produce a high percentage of processing apples. Per capita processed apple consumption in the Northeast was 28 percent higher than the national average, while in the South, per capita consumption was 18 percent below (table A-2). While consumers from the Western States indicated a much stronger preference for fresh apples than processed, consumers in the Midwest demonstrated an equal preference for fresh and processed apple products. Per capita processed apple consumption in both regions, however, were about equal to the national average.

Among the processed apple products, Northeasterners showed preference towards apple juice, dessert or baked apple products, dried apples, and apple sauce (table A-1). In particular, consumers in the Northeast had the highest per capita consumption of apple juice and dessert or baked apple products (table A-2). Consumers in the Western States also indicated preference for apple juice but the relative per capita consumption of apple juice in the Northeast was 25 percent higher (table A-2). Similarly, consumers in the Midwest also indicated a preference for dessert or baked apple products, but the relative per capita consumption of these products in

Figure A-4
U.S. population and apple consumption by region



Source: Economic Research Service, USDA.

the Northeast was 24 percent higher. The Western States tied with the Midwest as having the highest relative per capita consumption of dried apples (14 percent above the national average). The Midwest also had the highest relative per capita consumption of applesauce (31 percent above the national average) and “other” processed apple products such as jams and jellies. Meanwhile, per capita consumption of all these processed products, except “other”, lagged behind the national average in the Southern States.

Suburban Residents Consume More Fresh Apples, Metropolitan Residents More Processed Apples

About 47 percent of the U.S. population reside in suburban areas, 32 percent in metropolitan cities, and 21 percent in rural areas (table A-1). Daily per capita use of fresh apples was slightly higher in suburban areas, reflecting in part the higher concentration of supermarkets in these areas and the larger percentage of the middle-income and high-income population residing in these areas. Metropolitan area consumers had a slightly stronger preference for processed apple products, particularly for products such as apple juice and dried apples. Consumption of processed apples such as in applesauce and baked products, meanwhile, were consumed in larger proportions by suburban consumers (table A-2). Although ahead in total processed apple per capita use, consumption of applesauce and baked apple products in metropolitan areas were below the national average. Meanwhile, per capita use of fresh and most processed apples fell below the national average in rural areas, where a large proportion of low-income populations reside and where there are smaller and fewer food stores.

Non-Hispanic, White Consumers Dominate the Market for Apples, But Preference for Fresh Apples Lean Towards Hispanics and People of Other Races

Apple consumption patterns for the top three racial groups (white, black, Hispanic) and all others (two-thirds of which are Asian) are presented in tables A-1 and A-2. Non-Hispanic, white consumers represented 72 percent of the diverse racial and ethnic makeup of the U.S. population in the 1990 Census. On a per capita basis (market share divided by population), whites indicated preference for all apple products except apple juice (table A-2). While fresh-market apples were found to be important in their diets (fig. A-5), whites indicated stronger preference for dried apples, applesauce, baked apple products, and “other” processed forms. While accounting for a smaller proportion of the U.S. population, fresh apple consumption was 27 percent higher among Hispanics than non-Hispanic, whites (table A-2). Consumption of fresh apples, however, was highest among people of other races (Asians, Pacific Islanders, American Indian, etc.).

Non-Hispanic, black consumers indicated no preference for fresh apples in favor of apple juice, baked apple products, and “other” (table A-1). This ethnic group made up 13 percent of the U.S. population but consumed only about 7 percent of the fresh apples. However, they consumed 15 percent, 13 percent, and 14 percent of the apple juice, baked apple products, and “other” processed products, respectively. These findings were reinforced in table A-2. Fresh apple consumption by non-Hispanic, blacks was 46 percent below the national average. These consumers, however, had the highest consumption of processed apple products, in

general. They rank second in apple juice and baked apple product consumption and had the highest relative consumption of “other” processed products. Leading in apple juice consumption, consumers from “other” backgrounds were found to consume 3 percent more apple juice than non-Hispanic, blacks.

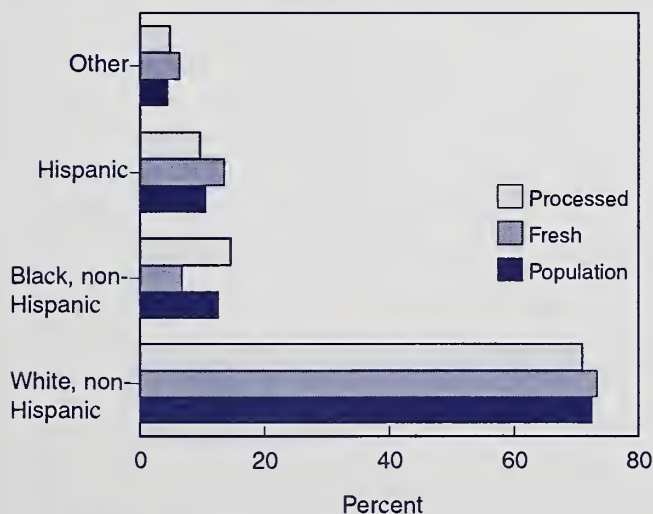
Per Capita Apple Use Rises With Income

Survey results indicated that per capita consumption of fresh apples increases with income. Households were grouped into three income brackets utilizing the Federal poverty guidelines developed by the Department of Health and Human Services for the implementation of Federal food programs. Households with income falling below 130 percent of the poverty level (eligible for receiving food stamps) were regarded as low-income; those with income between 130 and 350 percent of the poverty level were middle-income; and those with income greater than 350 percent of the poverty level were high-income. About 19 percent of the households in this study were in the low-income bracket, 42 percent were middle income, and 39 percent were high-income (table A-1).

Partly reflecting the high value associated with fresh produce, fresh apple consumption was favored by high-income households who represented 39 percent of the population and consumed 45 percent of all fresh apples (table A-1). Fruit intended for the fresh market are typically more costly to produce as they require more careful management to help meet consumer preferences on size, shape, taste, and other physical qualities. The average daily per capita use of fresh apples of high-income households was 16 percent higher than the national average (table A-2). Households in the low-income bracket indicated the least preference for fresh apples as their average daily per capita use were about 20 percent below average, much lower than the already below-average consumption by middle-income households. This pattern in consumption is consistent with findings of a recent ERS study whereby low-income regions exhibited above-average grocery store expenditures on calorie-dense food items and below-average expenditures on many of the vegetable items—the opposite pattern exhibited by high-income markets (Jekanowski and Binkley).

For processed apples, per capita use increased with income for dried apples, applesauce, and dessert or baked apple products. High-income households consumed most of these three products, while daily per capita use of low-income households were far below the average, as they may regard these products as luxury or discretionary items in the preparation of a basic nutritious meal (table A-2). Dried apples are an expensive snack item which low-income households may replace with cheaper, more affordable alternatives. Applesauce is usually used as a complement for meat menus that require more expensive cuts of meat such as pork chops and roasts, and baked apple products are often eaten as a

Figure A-5
U.S. population and apple consumption
by racial/ethnic background



Source: Economic Research Service, USDA.

Table A-1--U.S. apples: Consumption distribution by fresh and processed product

	Population 1/	All apples	Fresh	Processed					
				All	Juice	Dried	Sauce	Dessert	Other
				products				or baked	
Percent									
Census region									
Northeast	19.6	23.5	20.0	25.1	25.9	20.4	20.8	26.6	16.0
Midwest	23.5	23.6	23.4	23.7	22.2	27.4	30.8	25.7	30.0
South	34.9	28.2	27.3	28.6	28.4	26.2	26.9	30.2	39.1
West	22.0	24.7	29.3	22.7	23.4	26.0	21.5	17.5	14.9
MSA status									
Metropolitan	31.8	34.5	29.1	36.8	38.6	38.3	29.3	28.7	31.7
Suburban	47.0	48.7	51.9	47.2	46.3	47.4	52.1	51.4	44.8
Rural	21.2	16.9	19.0	16.0	15.1	14.3	18.6	19.9	23.5
Race/ethnic origin									
White, non-Hispanic	72.5	71.7	73.3	71.0	68.5	88.2	81.0	81.0	78.2
Black, non-Hispanic	12.6	12.3	6.8	14.6	15.3	6.0	11.7	12.7	14.2
Hispanic	10.6	10.8	13.5	9.6	10.7	2.3	5.4	5.0	5.4
Others	4.4	5.3	6.4	4.8	5.5	3.6	1.9	1.3	2.3
Household income as a percentage of poverty									
0-130%	19.2	18.3	15.4	19.5	20.7	12.4	15.9	10.2	19.9
131-350%	41.8	40.5	39.5	41.0	40.8	33.4	40.9	45.7	42.4
351% and above	39.0	41.2	45.1	39.5	38.6	54.2	43.2	44.2	39.7
Gender and age									
Male:									
All	48.9	51.6	51.4	51.6	52.4	49.2	45.1	53.6	55.0
< 2	1.6	3.9	0.7	5.3	5.5	0.6	6.8	0.2	2.4
2-5	3.2	9.2	5.1	10.9	12.4	3.6	6.9	1.5	5.8
6-11	4.6	6.0	6.1	5.9	5.6	7.0	9.2	2.7	7.6
12-19	5.8	5.3	4.4	5.7	6.2	7.4	2.4	6.6	5.9
20-59	27.0	21.0	25.8	18.9	19.4	24.9	10.2	27.8	25.8
60 and older	6.8	6.2	9.3	4.9	3.4	5.8	9.6	14.8	7.5
Female:									
All	51.1	48.4	48.6	48.4	47.6	50.8	54.9	46.4	45.0
< 2	1.5	3.2	0.5	4.3	4.5	0.3	6.1	0.1	1.7
2-5	3.1	7.5	4.0	9.0	10.1	2.9	6.3	0.8	4.3
6-11	4.4	6.4	5.4	6.8	7.1	4.4	7.5	2.1	6.1
12-19	5.6	6.0	4.2	6.7	7.4	3.1	4.0	3.1	4.9
20-59	27.7	18.6	25.2	15.7	14.6	29.6	15.0	29.0	20.0
60 and older	8.9	6.9	9.2	5.9	3.9	10.5	15.9	11.4	8.1

Totals may not sum due to rounding. 1/ Percent of the U.S. population in each of the categories.

Source: U.S. Department of Agriculture, Agricultural Research Service, 1998. 1994-96 Continuing Survey of Food Intake by Individuals.

Table A-2--Relative per capita consumption of apple products: Subgroup population divided by U.S. population

	All apples	Fresh	Processed					Other
			All products	Juice	Dried	Sauce	Dessert or baked	
Percent								
Census region								
Northeast	120	102	128	132	104	106	136	81
Midwest	100	100	101	95	114	131	109	130
South	81	78	82	82	75	77	87	113
West	112	133	103	106	114	97	80	65
MSA status								
Metropolitan	108	91	116	121	121	92	90	101
Suburban	104	110	101	99	100	111	109	95
Rural	80	90	75	71	64	88	94	112
Race/ethnic origin								
White, non-Hispanic	99	101	98	95	121	112	112	108
Black, non-Hispanic	98	54	116	122	46	92	101	114
Hispanic	102	128	91	101	21	51	48	52
Others	120	145	109	126	82	44	29	51
Household income as a percentage of poverty								
0-130%	95	80	102	108	61	83	53	105
131-350%	97	94	98	97	79	98	109	101
351% and above	106	116	101	99	114	110	113	98
Gender and age								
Male:								
All	106	105	106	107	100	92	109	112
< 2	249	42	339	318	36	439	15	43
2-5	285	159	340	385	111	215	48	187
6-11	131	134	130	122	154	200	59	172
12-19	92	77	99	107	129	41	114	105
20-59	78	96	70	72	89	38	103	99
60 and older	92	138	72	51	86	142	219	114
Female:								
All	95	95	95	93	96	107	91	89
< 2	210	32	287	295	18	405	6	41
2-5	245	131	294	331	93	208	25	145
6-11	147	125	156	162	100	173	48	143
12-19	107	76	120	133	57	72	56	92
20-59	67	91	57	53	107	54	105	75
60 and older	77	103	66	44	118	178	127	94

Source: CSFII, 1994-96 and 1998, two-day dietary recall data.

dessert or snack for which low-income households may decide to do away with in order to economize.

Products that were favored more by households in the low-income bracket were apple juice and items such as jams and jellies which are often offered at lower prices in grocery stores under a private label brand. Also helping to boost consumption of these products among the low-income households is perhaps their participation in Federal food programs such as the National School Lunch Program and other food assistance programs such as the Food Stamp program and the Supplemental Women, Infant, and Children (WIC) program where these apple products are included. Low-income consumers represented 19 percent of the population and consumed 21 percent of apple juice products and 20 percent of other products (jams and jellies) (table A-1). Based on table A-2, per capita daily use of these products by low-income households was found to be 8 percent and 5 percent above the national average.

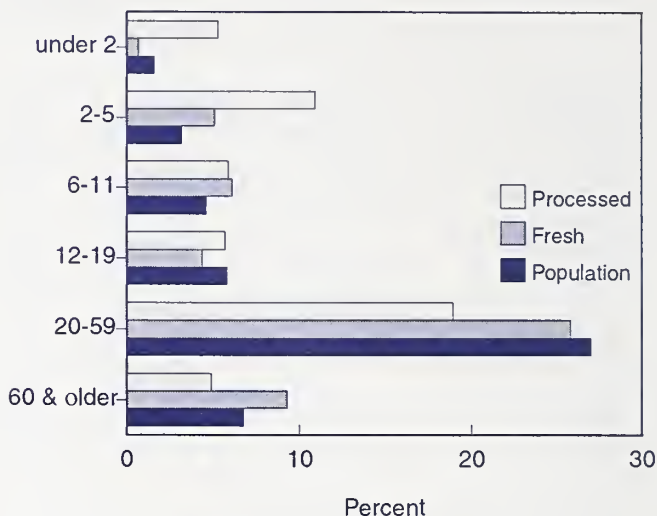
Apples Are Preferred More By Males, Consumption Patterns Vary Distinctly by Age

Male consumers have a stronger preference for fresh and processed apple products than female consumers do. This may be attributed in part to the fact that food intake of males generally tend to be higher. Survey results indicated that although males represented a slightly smaller segment of the population, they, relative to females, accounted for a larger share of the fresh apples and processed apple products consumed, with the exception of dried apples and applesauce (table A-1). The daily per capita use of apples (all) among males was 6 percent higher than the national average while those for females was 5 percent lower (table A-2). Relative to females, apple consumption by males was also found to be 11 percent higher for the fresh-market product and 12 percent higher for all processed products. Between fresh and processed, male consumers in general had a slightly higher preference for processed apple products. Female consumers, meanwhile, were more indifferent in their preference, with the consumption of both fresh and processed apple products lagging the national average.

There are distinct fresh apple consumption patterns by age (figs. A-6 and A-7). Children who were 2 years in age through 11 years have the highest consumption of fresh apples. In addition to its nutritional content, this may partly reflect the popularity of this fruit as part of a packed meal, especially among school children. Fresh apple consumption was well below average for children below 2 years old, reflecting the bulk of their apple consumption in the form of baby food, including apple juice. Aside from the infant years, children begin to consume fewer fresh apples once they reach the teen years (defined here as ages 12-19), especially among boys. This consumption pattern continues until adulthood, with consumers between the ages 20 and 59, espe-

Figure A-6

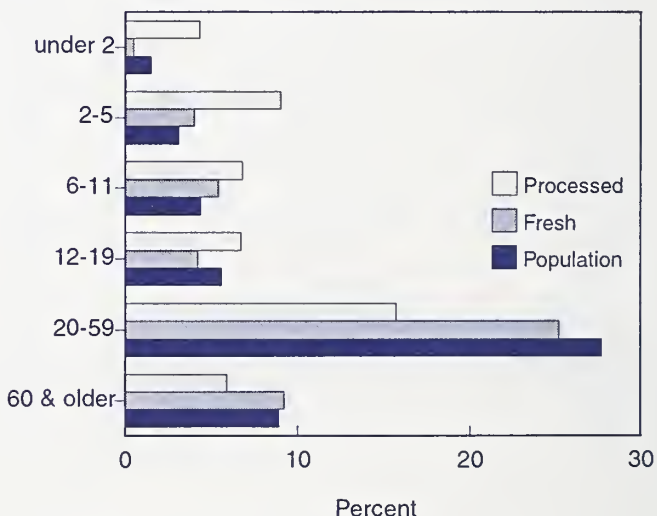
U.S. population and apple consumption by male age group



Source: Economic Research Service, USDA.

Figure A-7

U.S. population and apple consumption by female age group



Source: Economic Research Service, USDA.

cially women, having the lowest preference for fresh apples. Perhaps partly due to stronger health concerns, consumption picks up again as consumers reach the age of 60 years and older, with men eating more fresh apples than females. Publicity surrounding recent research findings helped increase public awareness of the many health benefits obtained from apple consumption. Aside from being a delicious source of dietary fiber, apples contain numerous vitamins, minerals, and nutrients that help sustain good health by lowering cholesterol, reducing hypertension, promoting bone and lung health, managing diabetes, and reducing the risk of heart attacks, strokes, and certain types of cancer. Some of

these recent research findings are summarized in the U.S. Apple Association's website www.usapple.org.

Distinct patterns also exist in processed apple consumption by different age groups. Processed consumption was higher among younger children (both genders) and teenage girls. Children 2 to 5 years in age had the highest consumption. Children in this age bracket, including those younger than 2 years, had at least more than twice as many servings of processed apple products as fresh. However, as children grew older, their choices of food also expanded and since they take over more of the food decision-making responsibility, they opt for other foods when it becomes their choice. This may partly explain why, like the pattern in fresh apple consumption, the importance of processed apples in the diets of young children faded as they approached teenage years and adulthood. Among adults, those 20 to 59 years of age, had the least preference for processed apple products.

Apple juice—the most dominant of all processed apple products—was the most popular apple product among young children and teenagers (table A-2). Per capita consumption was highest among children between 2 and 5 years of age, with consumption by boys exceeding that of girls by as much as 16 percent. Girls started to have more preference for apple juice than boys after 5 years of age. The early introduction of apple juice into the diets of young children, particularly among infants and toddlers, may have earned its early acceptability to consumers in this age group. Children's preference for apple juice, however, diminished as they grew older, with per capita use falling well below average as they reached adulthood. From among the adults, those 20 to 59 years old were found to have the least preference for apple juice.

Applesauce was the second most popular apple product among younger children (less than 2 to 11 years of age). Boys had a slightly stronger preference for applesauce than girls. Teenagers, and more so adults who were in the 20 to 59 year age bracket, did not indicate any strong preference for the product and their daily per capita use were well below average. Among the processed apple categories, teenage boys favored dried apples (which includes cereal products) the most while teenage girls placed a stronger preference for apple juice. Although differing slightly in order of preference, both male and female adults 20 to 59 years old showed strong preference for dessert or baked apple products. Females in this age bracket, however, had a much stronger preference for dried apples. Meanwhile, the two most popular processed products among adult consumers 60 years and older were dessert or baked apple products and applesauce.

Conclusion

Apples are traditionally among the major mix of fruit grown in the United States. Serving both the fresh and processed

markets, apples remain a popular fruit item for many American consumers. The Economic Research Service's U.S. disappearance estimates for apple and apple products indicate a general rising trend overall. Still, little is known about the market distribution of fresh and processed apples in the United States. Utilizing data from USDA's CSFII survey, this article arrives at some understanding of the market distribution of fresh and processed apple consumption. The following highlights the findings of this article:

- While away-from-home eating has become a clear trend in the United States in the last several years, at-home use still dominates both the fresh and processed apple markets. This means most apples and apple products are purchased at retail stores and eaten as home foods. Baked apple products, although also mostly consumed at home, had the largest share of away-from-home consumption.
- Fresh apple consumption was favored more in the Western States and less in the Southern States. Meanwhile, consumption of processed apple products in general was strongest in the Northeastern States and weakest in the Southern States.
- Fresh apple consumption was slightly higher in suburban areas, while processed apple consumption was greatest in metropolitan areas. In rural areas, the daily per capita apple use was generally below average.
- People of "other" races were the strongest consumers of fresh-market apples followed by Hispanics. Non-Hispanic white consumers also favored fresh-market apples, but their preference towards processed apples was stronger. African-Americans, on the other hand, indicated the strongest preference for processed apples, particularly apple juice, but their consumption of fresh-market apples was the lowest.
- Per capita consumption of fresh apples increases as income rise. Fresh-market apples were favored the most by high-income households and were favored the least by low-income households. From among the processed apple products, dried apples, applesauce, and dessert or baked apple products were popular among wealthier households. The low-income households, on the other hand, favored apple juice and other miscellaneous processed products such as jams and jellies.
- Male consumers have a stronger preference for apples in general than females. The daily per capita apple use by males was slightly above average while consumption by females was slightly below average. Moreover, there are distinct patterns in consumption by age. Children 2 to 5 years of age have the highest consumption of fresh and processed apples, while adults 20 to 59 years of age have the lowest preference for these products. The two most dominant processed products—apple juice and applesauce—were popular among young children, but these products' appeal to consumers diminished with age.

USDA Food Consumption Data

USDA collects and compiles two major data sets on food consumption in the United States, the Supply and Utilization or food disappearance data, compiled by USDA's ERS, and the Continuing Survey of Food Intakes by Individuals, compiled by USDA's Agricultural Research Service. Both data sets are key components of ongoing Federal efforts to monitor the nutritional health and dietary status of U.S. consumers. They were mandated by Congress under the National Nutrition Monitoring and Related Research Act of 1990. When used together, they provide a comprehensive picture of the Nation's eating habits.

Food Supply and Utilization Data, also known as food disappearance data, measures the flow of raw and semi-processed food commodities through the U.S. marketing system. They are neither a direct measure of actual consumption, nor of the quantity of food actually ingested. The total amount available for domestic consumption is estimated as the residual after exports, industrial uses, seed and feed use, and year-end inventories are subtracted from the sum of production, beginning inventories, and imports. The use of conversion factors allows for some subsequent processing, trimming, spoilage, and shrinkage in the distribution system. However, the estimates also include residual uses for which data are not available (such as miscellaneous non-food uses, and changes in retail and consumer stocks).

With data back to 1909 for most commodities, the food disappearance data are useful as indicators of trends over time. The data are most commonly used to measure the average level of food consumption in the country, to show year-to-year changes in consumption of major foods, to calculate the approximate nutrient content of the food supply, to establish long-term consumption trends, and to permit statistical analyses of effects of prices and income on food consumption. Because they include spoilage and waste accumulated through the marketing system and in the home, the data typically overstate actual consumption. A 1997 ERS study suggested that such losses may exceed 25 percent of the edible food supply.

Food disappearance data reflect the amount of major food commodities entering the market, regardless of their final use. Final product forms and consumption locations are not usually known, and little or no data exist on supplies of further-processed products. In short, relatively good information exists for many food ingredients, but not for foods as actually eaten. For example, the food disappearance data provide a good estimate of the annual per capita con-

sumption of apples but provide no information on products consumed—fresh, juice, frozen, canned, dried; where the apples/products were marketed—supermarket, hospital, school, restaurant, or food manufacturer; how they were consumed—in frozen meals, baked products, or on salads; how they were prepared—cooked from scratch or reheated from a canned or frozen product; or the socioeconomic characteristics of the consumer that ultimately ate the food.

Data used in this paper are taken from USDA's **Continuing Survey of Food Intakes by Individuals (CSFII)**, 1994-96 and 1998. The 1998 CSFII is a supplemental children survey to the 1994-96 CSFII, which is a nationally representative sample. The 1998 CSFII adds intake data from 5,559 children from birth through age 9 years to the intake data collected in 1994-96. The CSFII measures foods actually eaten by individuals. The survey records food intake over a specific period of time (two non-consecutive days in 1994-96 using 24-hour dietary recalls). The survey collects demographic information, such as household size, income, race, age, and sex, and information on where a food was purchased, how it was prepared, and where it was eaten, in addition to food-intake data. The CSFII provides information for use in policy formation, regulation, program planning and evaluation, education, and research. For example, data from recent surveys have been used to evaluate the impact of food fortification on nutrient intakes, to estimate exposure to pesticide residues and other contaminants from foods, and to target nutrition assistance and education programs to those who need them most. The data are particularly valuable for measuring the effect of socioeconomic and demographic characteristics on food consumption.

In this study, we make use of the Food Commodity Intake Database (FCID) from the Environmental Protection Agency. FCID contains human food consumption data expressed in terms of agricultural food commodities on 5,831 different foods and beverages people of different ages reported eating in 1994-96 and 1998. FCID provides the edible amount of agricultural food commodities contained in each food reported eaten in CSFII.

The 1994-96 CSFII data include a sample weight for each respondent, indicating the number of people the sample represents. The share of an apple product by location can be estimated by calculating the weighted-sum of the product consumed in each location. Similarly, the socioeconomic and demographic characteristics of the respondents can be used to estimate the consumption share of apples by these characteristics.

References

- Jekanowski, M. and J. Binkley. "Food Spending Varies Across The United States," *Food Review*. January-April 2000. Vol. # 23, Issue.1.
- Kaufman, Phil R., Charles R. Handy, Edward W. McLaughlin, Kristen Park, and Geoffrey M. Green (2000). *Understanding The Dynamics of Produce Markets: Consumption and Consolidation Grow*. U. S. Dept. of Agr., Econ. Res. Serv., AIB-758.
- Litwak, David (1988 and 1998). "Annual Consumer Expenditure Study." *Supermarket Business*. New York, NY. September.
- Putnam, J. and J. Allshouse. "Food Consumption, Prices, and Expenditures, 1970-97," Statistical Bulletin No. 965, April 1999.
- U.S. Apple Association, <http://www.usapple.org/>.
- USDA, ERS. *Food Consumption, Prices, Expenditures*. AER No. 138. July 1968.
- USDA, ERS. *Fruit and Tree Nuts Situation and Outlook Yearbook*. FTS-290. October 2000.

Competitive Behavior in Orange Juice Markets

James Binkley, Patrick Canning, Ryan Dooley, and James Eales¹

Abstract: This article examines how the movement towards a larger more consolidated orange juice marketing system affects market prices. Observing the retail price for specific orange juice products, including leading national brands and private label brands, in 54 U.S. markets over a 1-year period can help us discern the pricing behavior of brand marketers, wholesalers, and retailers in these markets. The data provided little compelling evidence that markets further advanced in the consolidation process engaged in non-competitive pricing behavior. However, increased brand competition, particularly between private label and leading national brands, does appear to lower average market prices.

Keywords: Consumer demographics, national brands, orange juice, price behavior, private labels, wholesale and retail concentration.

Introduction

Orange growers and orange juice consumers comprise the beginning and end points of the orange juice supply chain. In the United States, no single orange grower produces enough product to influence the price they receive in the market, nor does any group of consumers purchase enough product to influence the price they pay. However, the processing, packaging, and distributing stages of the orange juice supply chain have become increasingly concentrated, with several big companies controlling large shares of the orange juice market at different stages along the supply chain. When firms become very large, they may be able to exercise their influence on market prices. When this happens, they gain at the expense of growers and consumers.

Firms are motivated to grow in part so they can realize potential cost savings that often come with increasing size and/or scope of production. When firms achieve cost savings through expansion, they are often able to offer their products at lower prices than their smaller competitors. This may lead to obtaining higher market shares and eventual concentration of industries participating in particular market segments. With these two forces in play within the highly concentrated orange juice marketing system, an examination of market data is presented below to discern if non-competitive or lower cost pricing behaviors are more evident in the observed prices.

To understand the effects of industry concentration, one can observe a market over time, or observe many different markets at some point in time. This paper presents analysis of the latter type, focusing on specific orange juice commodity market prices across 54 U.S. grocery marketing areas (table B-1) over a 52-week period, November 4, 1989, to November 2, 1990. There are a number of advantages to taking this approach. First, while the decade of the 1990s witnessed dramatic movements toward consolidation in the orange juice marketing system, regional markets in 1990 exhibited wide variability in their stages of consolidation. Many grocery marketing areas had four-firm concentration ratios² (CR-4) near or above 90 percent in both the wholesale and retail stages of the grocery marketing system. Many other marketing areas had CR-4 ratios around or below 50 percent at wholesale and/or retailing stages.

Another advantage to looking at the markets over this period is that it encompasses the time before, during, and after a severe negative supply shock in the Florida orange crop, brought on by the December 1989 orange freeze. To observe price behavior, prices must change and in this period, retail prices went from their 1989 low point to the highest levels obtained in the decade of the 1990s, and eventually back down again. How individual brand prices change in these conditions can say a lot about the competitive behavior in the industry.

A third advantage to the 1989/90 time period is that it affords the use of a unique data resource that has since been discon-

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² The four-firm concentration ratio measures the share of total sales within a well defined market going to the four largest companies operating in that market, for example grocery sales in the wholesale or retail segment of the Baltimore, MD grocery marketing area.

Table B-1--Regional markets

East		Midwest		South		West
Albany, NY	Scranton, PA	Charleston, WV	Milwaukee, WI	Atlanta, GA	Memphis, TN	Denver, CO
Baltimore, MD	Syracuse, NY	Chicago, IL	Minneapolis, MN	Birmingham, AL	Miami, FL	El Paso, TX
Boston, MA		Cincinnati, OH	Oklahoma City, OK	Charleston, SC	Nashville, TN	Los Angeles, CA
Buffalo, NY		Cleveland, OH	Omaha, NE	Charlotte, NC	New Orleans, LA	Phoenix, AZ
Hartford, CT		Detroit, MI	Peoria, IL	Dallas, TX	Norfolk, VA	Portland, OR
New York, NY		Grand Rapids, MI	Quad Cities, IL	Greenville, SC	Raleigh, NC	Salt Lake City, UT
Philadelphia, PA		Green Bay, WI	St. Louis, MO	Houston, TX	San Antonio, TX	San Francisco, CA
Pittsburgh, PA		Indianapolis, IN	Wichita, KS	Jacksonville, FL	Shreveport, LA	Seattle, WA
Portland, ME		Kansas City, MO		Louisville, KY		Spokane, WA

tinued. Data for this analysis come from Selling-Area Markets, Inc. (SAMI), a grocery marketing research firm that ceased operations in December 1990, at which time much of their data resources were donated to Purdue University. Information contained in this data includes complete shipping logs from grocery-shipping warehouses serving supermarkets in 54 distinct grocery marketing areas (GMA) whose total sales represented around 85 percent of U.S. supermarket sales. Log entries included shipments and average unit prices, in continuous 4-week intervals, of specific grocery items sold in each market area. This study uses summaries of this data for average prices over four approximately 3-month quarters ending November 2, 1990. The prices are for two frozen concentrate national brand products, two refrigerated national brand products,³ and an average price for all 'private label' products, one frozen concentrate average and one refrigerated average. Also used for this analysis is the market share that each brand (including the combined private label brands) controls within each market.

The remainder of the paper is organized as follows. The next section presents price analysis for the six orange juice commodities taken from the SAMI data. The analysis will take into account such factors as wholesale and retail concentration, private label market shares, and average household income of consumers in each GMA. Then a consideration of this price analysis is made in the context of current trends in food marketing systems. A separate box insert is also included for readers interested in a background of the orange juice marketing system. Some of the material in this box insert can be found, in greater depth, in the website www.ultimatecitrus.com. This background focuses on the Florida orange juice industry, which typically accounts for over 90 percent of orange juice production marketed in the United States.

Price Analysis

By 1997, the average Florida orange grove was 40 percent larger than in 1987 (1997 *Census of Agriculture*). Florida

³ The four national brand products examined were each sold in all 54 marketing areas, while the two private label categories examined represent average prices of all private label FCOJ and from concentrate refrigerated orange juice respectively, sold within each GMA.

Definitions

Not From Concentrate (NFC)—Juice that is flash-heated to pasteurize it immediately after the fruit is squeezed.

From Concentrate (RECON)—Juice manufactured as a frozen concentrate, then reconstituted by adding back the amount of water originally removed.

Frozen Concentrate (FCOJ)—Freshly squeezed juice that has been concentrated and frozen. Consumers reconstitute the juice by adding back the amount of water originally removed.

Source: Florida Department of Citrus.

orange juice processing firms totaled 27 in the 1989-90 season, while only 18 firms processed orange juice in Florida in the 2000-01 season (Spren and Fernandes). About half of all processed orange juice produced in Florida is branded by the two leading national orange juice marketing processors (Hardy). About half of all groceries purchased in supermarkets nationwide were purchased from the 20 largest grocery chains—this represents an increase of about one-third in the 20-firm supermarket share since the early 1990s. Between the marketing processors or packagers and retailers, grocery wholesalers have also become far more consolidated since 1990. Working backwards from retailing to branding, a closer look is taken at local market pricing behavior, both in markets more advanced in this trend towards consolidation and markets far less so.

Retail orange juice prices tend to vary by form (e.g., FCOJ, NFC and RECON), by brand and private label, by season (reflecting uneven supply conditions over time), by shipping distance from primary producing regions (e.g., shipping distance from Florida), by product attributes (e.g., calcium and pulp), and by socioeconomic attributes of the consumer (e.g., average household income in the market area). To minimize the confusion that these factors create in our ability to explain observed retail prices in this analysis, a num-

ber of steps are taken. First, specific national brand products are examined, both over time and across markets. For example, a line of FCOJ of a specific brand name, size, and type of container, will be examined. For the private label products, the specificity may vary by region. Secondly, price observations are separated into four approximately equal time periods spanning 1 year. Accounts of the other considerations mentioned here will be discussed in the concluding section of this article. Analysis begins with a look at retail consolidation.

Retailers. In 1990, grocery sales by the four largest grocery chains operating in a single SAMI grocery marketing area accounted for, on average, just under 70 percent of that area's grocery sales.⁴ In some regions, the four largest grocery chains served over 85 percent of the retail market in their area, while other marketing areas saw less than half their market being served by the four largest chains (Metro Market Studies). With such wide variation in retail concentration of local marketing areas, it is useful to group data from the 10 markets with the highest concentration of larger grocery chains, group data from the 10 markets with the lowest concentration, and compare prices among the two groups.

This is what was done, as reported in figure B-1. Average price data for six orange juice products are presented for both the group of 'low' retail concentration markets (depicted by the light-colored bars) and the group of 'high' retail concentration markets (depicted by the dark-colored bars). Prices are reported as averages for four 3-month periods beginning November 4, 1989.⁵ The six products include three FCOJ products and three refrigerated products, and the figure groups the frozen and refrigerated products in two separate graphs. 'Brand 1' and 'Brand 2' under the frozen segment are specific basic leading national brand frozen concentrate products—that is, they are the exact same product in every marketing area. Also in the frozen segment, 'private label' is not a specific product, but is the average price across all private label or store brand FCOJ products sold within a specific GMA. For the refrigerated segment, one brand is a specific refrigerated product from concentrate, the other is a specific not-from-concentrate product, and 'private label' is again an average of prices, but this time for all private label refrigerated from concentrate products within a specific GMA.

In order that one might compare relative prices between groups of markets, for example 'low' versus 'high', figure B-1 and subsequent figures show prices in all quarters for both the low and high groupings after they are divided by the first quarter price of the commodity in the low grouping

of markets. For each of the six commodities, we denote the Q1 price of the low grouping as the 'base price,' so that the first of eight price bars presented for each commodity (prices in four quarters for two market groupings) always has a value of 1, since the first quarter low market price is divided by itself. All other price bars in each group of eight reflect the price in a particular quarter (Q1 to Q4) for a particular market group (low or high) relative to the base price.

For example, in figure B-1, the Q1 price of Brand 1 in the high group (depicted by the dark-shaded bar) has a value of 0.95, while the Q3 price in the low group has a value of about 1.2. These indicate that the Q1 price in the high group for Brand 1 is 5-percent lower than the base price, and that the Q3 price in the low group is about 20-percent higher than the base price. In some instances in this section, it may be noted that the largest percentage increases from a Q1 price were observed in the high market groupings, but the figure this statement pertains to shows the highest bar is for a price in the low grouping. This is best explained by an example. If a low group price in Q3 is 10-percent higher than the low group price in Q1, a bar in the figure would rise to 1.1, since Q1 low is the base price. For this same product in the high group, suppose that the third-quarter price is 10.5 percent higher than its Q1 price in this high group, but that the Q1 price in the high group is 5-percent lower than the base price. In this case, the bar in the figure depicting the Q3 price in the high group would rise to 1.05 since 1.05 divided by 0.95 (the Q1 price in the high group relative to the base price) equals (approximately) 1.105.

The first graph in figure B-1 depicts the four quarterly average prices in the frozen segment. This graph tells us that for all three products, average first-quarter prices are lower (by as much as 10 percent for private label products) in the group of markets with a high degree of retail chain concentration. While prices in the subsequent three quarters generally go up and then down (reflecting the effects of the December 1989 freeze), those markets with 'low' retail concentration maintain a higher price for each of the three commodities.

The other graph in figure B-1 depicts the same information for the three commodities in the refrigerated segment. The story is very much the same, with the one exception being the first-quarter price of 'Brand 1', which is about the same in both the 'low' and 'high' market groupings. Otherwise, the pattern is strongly skewed to a result that indicates each of the six orange juice products were consistently lower priced in markets at advanced stages of retail market concentration. Each of these results are consistent with an interpretation that retail concentration produces cost savings for the retail orange juice markets that can be passed on to consumers in these markets.

Wholesalers. Grocery wholesalers purchase orange juice from marketing processors and other packagers, and distribute this juice to multiple retailer outlets (see box). In the

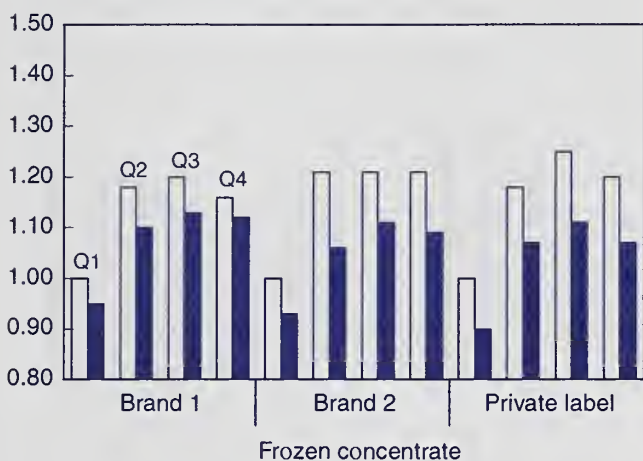
⁴The four largest chains within a grocery marketing area are generally a different group of four in each of the 54 market areas.

⁵Quarters' Q1 to Q3 represent 12-week intervals beginning Nov. 4, 1989, while Q4 is a 16-week interval ending Nov. 2, 1990.

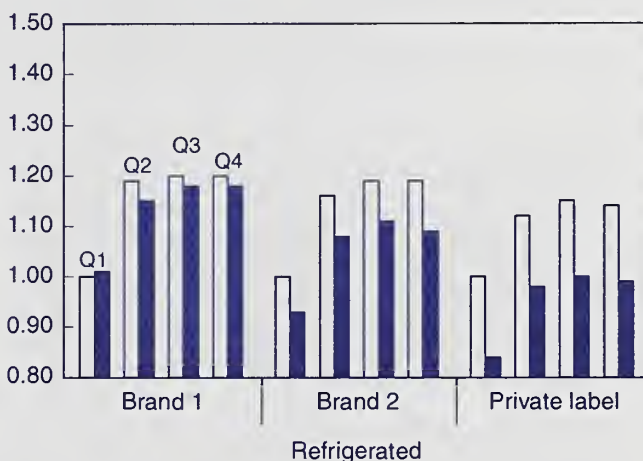
Figure B-1

Quarterly market prices of orange juice for period ending November 2, 1990*Grouped by retailer four-firm concentration ratios*

Percent of 'low' Q1 price



Percent of 'low' Q1 price



□ Low retailer concentration markets

■ High retailer concentration markets

case of integrated wholesalers that are chained owned and operated, these outlets are the chain-owned stores. In the SAMI data, all of the products sold by retailers within a grocery marketing area were distributed to these retailers by wholesalers, or from warehouses of integrated retailers, with operations inside the grocery marketing area, as this is largely how these marketing areas were defined (Connor). On average in 1990, 69 percent of the grocery wholesale business within a grocery marketing area was served by the four largest grocery wholesalers operating in that area. In some regions, the four largest grocery wholesalers serving that region supplied over 95 percent of the grocery market in their area, while other marketing areas saw as little as 42 percent of their grocery products passing through the four largest wholesalers servicing their marketing area.

For the same reasons as were discussed concerning retailer concentration, it is useful to observe orange juice market prices in areas of 'high' and 'low' wholesaler concentration ratios. Figure B-2 presents this information, using the same approach as was presented in figure B-1. The only difference being that the 10 marketing areas comprising the 'low' group reflect the 10 grocery marketing areas with the lowest concentration of wholesalers servicing these markets, and similarly, the 'high' grouping reflects the 10 highest such markets. Focusing first on the three commodities within the frozen segment, the findings nearly replicate those for the frozen segment in figure B-1. This indicates that orange juice markets where wholesale concentration is far advanced have very similar frozen concentrate orange juice pricing behavior as markets where retail concentration is far advanced.

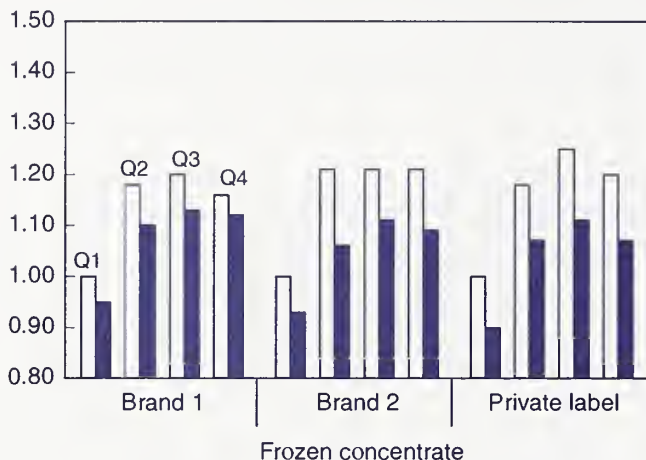
This is not the case for the refrigerated segment, where it appears equally as likely that orange juice prices are higher in either the 'high' or 'low' market groupings. For example, 'Brand 1' is priced higher in all four quarters in the 'high' market group, while 'Brand 2' shows the opposite result. For 'private label' brands, the price is higher in the 'high' markets in the first two quarters, and lower in the last two quarters. A closer look at the price data for the refrigerated segment shows that for all three brands, the highest percentage price increases occurred in the 'low' market groups. Taken collectively, the results in figure B-2 suggest, but not as strongly as for retailing, that markets with more advanced concentration of the grocery wholesaling functions tend to have lower market prices than do markets where such concentration is less advanced. There was a considerable shift in consumer preferences towards the consumption of refrigerated juices (particularly NFC) taking place in this period (Brown, et. al.), so it is not surprising that price behaviors are hard to discern in this segment.

Brands. Within the Florida market, there were 27 citrus processors operating in the 1989-90 growing season. For the retail market, what was not produced by or sold to the national brand marketers was packaged and sold under numerous regional brand names and private labels. While private label orange juice brands are not nationally marketed under a single brand name, one or several private label brands are available in every GMA. For example, a single bulk processor may produce an orange juice product that is marketed by several grocery chains under different brand logos. Another way a processor's product is marketed is

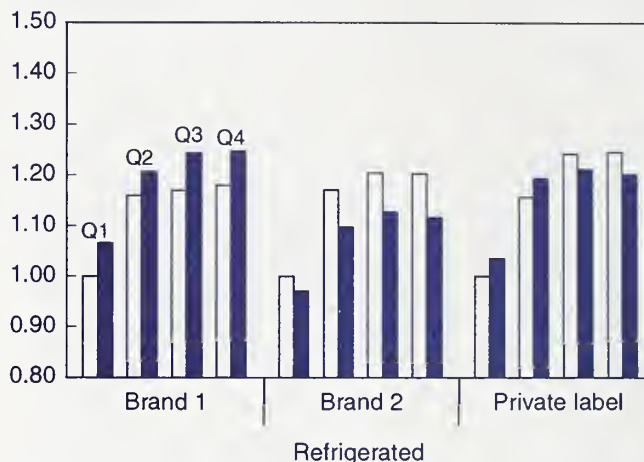
Figure B-2

Quarterly market prices of orange juice for period ending November 2, 1990*Grouped by wholesaler four-firm concentration ratios*

Percent of 'low' Q1 price



Percent of 'low' Q1 price



□ Low wholesaler concentration markets ■ High wholesaler concentration markets

under a regional brand logo. These products have a limited distribution area, possibly spanning several adjacent GMA's. Of the three types of marketing outlets, only the leading national brands engage in extensive national promotional activities, which can involve tens of millions of dollars for a single advertising campaign (Hardy). In 1990, the highest market share for a leading national brand in a single GMA was 38 percent (based on warehouse shipments to supermarkets within each GMA), while the highest combined market share for private labels was 47 percent.⁶ Variations on these shares were large across the different markets.

Among the most notable trends related to brand competition over the 1990s has been the continued growth in market share of private label orange juice brands. For example, in the frozen juice category for the 52-week period ending January 2000, 32 percent of sales in supermarkets were for private label brands, and this share is up from 30 percent in the previous year (PLMA's 2000 Private Label Yearbook). Also, specific private label brands from the largest grocery retailers are likely to be taking market shares away from other private label brands. In the GMA's covered in this study for 1990, private label market shares were as high as 32 percent in the refrigerated segment and 47 percent for

FCOJ. Averages were much lower—20 percent in the frozen segment and 11 percent in the refrigerated segment. This variation affords the opportunity to compare orange juice prices in high and low private label market share GMAs.

Figure B-3 depicts the markets with the 10 highest private label market shares and the markets with the 10 lowest shares. In both the frozen and refrigerated segments, the first quarter price is always lower in markets with high private label market shares, particularly in the refrigerated section. But after the effects of the negative orange supply shock drives prices of orange juice up, the price of most commodities goes up faster in those markets where private label shares are high. While this may suggest a mixed result, it is consistent with a scenario whereby the existence of a large private label market share brings the price of the leading national brands down. When the negative orange supply shock hits, processors must pass the full cost on to their customers in the markets with high private label shares since their price/cost margins in these markets are already low. Another result that stands out in the figure for the refrigerated segment is the large gap between markets with high and low private label shares for average first-quarter prices of both national brands. In subsequent quarters, the price of refrigerated orange juice does not change much in markets with low private label market shares, while the price increases noticeably in the markets with high private label shares. These findings are compelling evidence that national brand orange juice processors are very responsive to private label competition in regional markets.

⁶ By way of an example, the 'Brand 1' refrigerated market share reflects the gallons of all variants of this brand of refrigerated orange juice shipped to a GMA, divided by total gallons of all orange juice shipped to this GMA, including FCOJ shipments. FCOJ shipments are converted to their fresh equivalent volume.

Orange Juice Industry Overview

Florida typically accounts for more than 90 percent of orange juice production (USDA, 2000a). However, in the 1989/90 freeze year, Florida produced only 85 percent of the domestic orange juice supply, with Arizona, Texas, and California providing the balance. In addition to domestic production, imports are also an important source of supply. Brazil and Mexico are the major exporters to the United States (USDA, 2000b). In the years from 1989-91, Brazil accounted for approximately 85 percent of U.S. frozen imports, (which are either sold domestically as frozen or reconstituted and sold as chilled), while Mexico was the source of nearly all premium chilled orange juice. Frozen concentrate accounts for approximately 98 percent of total orange juice imports with not-from-concentrate making up the remaining 2 percent.

Processing and Packaging. In Florida, around 95 percent of orange production is purchased by orange processors (USDA, 2000b). The juice is either pasteurized immediately in the case of NFC or is processed into FCOJ. There are two types of orange processors – bulk processors and marketing processors. Bulk processors produce the majority of orange juice in the world. Marketing processors sell packaged juice under their own brand name and they often also purchase additional juice from bulk processors.

Juice packers purchase bulk product and package it and in most cases, distribute the packaged product. Some juice packers pack and market their own brands, while most pack for private labels. Another participant that may handle orange juice are blending houses, which are typically located in port cities. Blending houses blend concentrates from different sources and with different quality attributes in order to match customer specifications. In this case the buyer pays a higher price for a product that consistently meets its standards.

Most orange juice is transported in the form of bulk FCOJ to packing plants throughout the United States, since shipping volumes are 5-6 times smaller with concentrate than with reconstituted juice. Before packaging in the familiar round package, filtered water is added to the concentrate to bring the brix, a measure of concentration of solids, down to three times the concentration level of fresh juices. In order to bring the FCOJ to the concentration level of fresh orange juice, three parts water must be added by the consumer. For reconstituted juices, filtered water is added to return the brix to the average of fresh squeezed juice. It is then packaged in cardboard cartons, glass, or plastic jugs and sold at retail stores.

While only a small portion of concentrate is reconstituted and packaged at the processor, the majority of NFC is packaged at fruit processing sites and transported in final form. Limited amounts of bulk not-from-concentrate is also transported by road and rail tanker to other parts of the country for packaging.

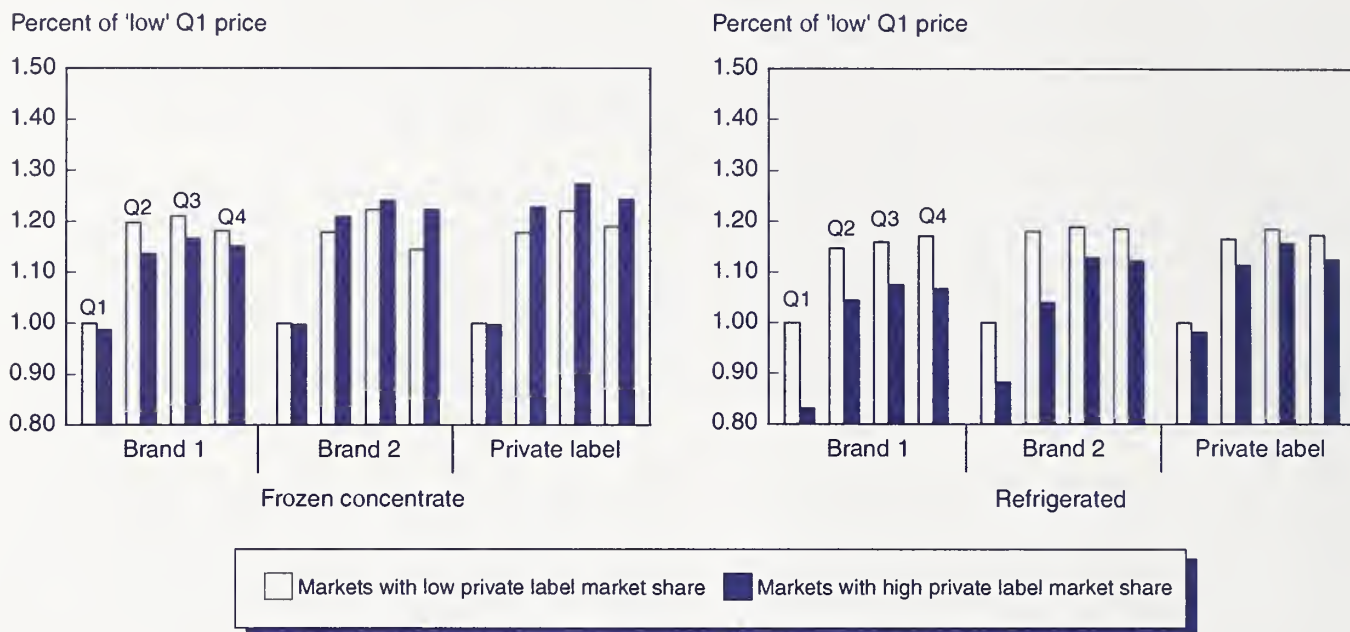
Storage. Bulk frozen concentrate can be stored for several years provided the temperature is kept at acceptable levels. NFC can be stored two ways, frozen or chilled. Each of these storage methods allows NFC to be stored for at least a year, a necessity as juice harvested from different times of the season are blended to obtain consistent quality the whole year through. NFC in retail packaging has a shelf life of approximately 63 days.

Nearly all storage is in the South Atlantic region and is distributed throughout the country to meet demand. FCOJ stocks are highly seasonal as stocks are at their lowest in November, at which time production begins anew, and peaks in May, when the last of the Valencia crop has been harvested.

Distribution. Nearly all orange juice distribution for retail sales follows one of three paths: 1) delivery through wholesalers, 2) delivery through retailers, and 3) delivery directly to the retail store. In the case of delivery through wholesalers, the advantage for the packer is the fact that they make only one transaction, as opposed to dealing with a number of individual stores. Also, the producer is more likely to gain wider distribution of their product. Retailers have also taken over the wholesale function. In this situation, producers reduce transactions, yet distribution across various retailers may require processors to work with a larger number of wholesale distributors. These first two paths are common for frozen, while the third, direct shipment to the retailer, is more common with chilled products.

Consumer Preferences. The last decade has seen a large swing in consumer demand from frozen orange juice toward refrigerated, and especially not-from-concentrate juices. The 1990 season is the first year in which chilled orange juice outsold frozen concentrate, and the gap has consistently widened since that time. Refrigerated orange juice is made from concentrate, except for those designated “premium” which are made from fresh oranges and never concentrated. The refrigerated type is more important in terms of sales than are frozen and shelf stable.

Figure B-3

Quarterly market prices of orange juice for period ending November 2, 1990*Grouped by private label market share*

Consumer demographics. Another way companies exercise market power is through segmentation of the consumer market, by charging different prices to different segments of consumers. With the data used here, it is not easy to discern at which level of the supply chain this pricing behavior originates, but prices are available in markets that have clearly distinguishable consumer characteristics. One approach is to determine if average household income within a specific market affects the market price of orange juice.

In the frozen segment, prices start higher and remain so throughout the year in markets where household incomes are high (fig. B-4). In the refrigerated segment a distinct pattern does not appear to show up. A closer look at the data reveals that for five out of the six commodities, the highest percentage increases in price occurred in markets with high household incomes. While a number of possible explanations can be offered, it will simply be noted here that the results from this experiment suggest there may be some tendency towards higher consumer orange juice prices in areas with high household incomes.

Summary

There are far fewer sellers and buyers along the orange juice supply chain today than there were only 10 years ago. This article presented comparisons of pricing behavior at the beginning of this timeframe (1990) between markets more advanced in the marketing consolidation process and markets far less so. Findings indicate that retail orange juice prices were generally lower in markets where a few grocery

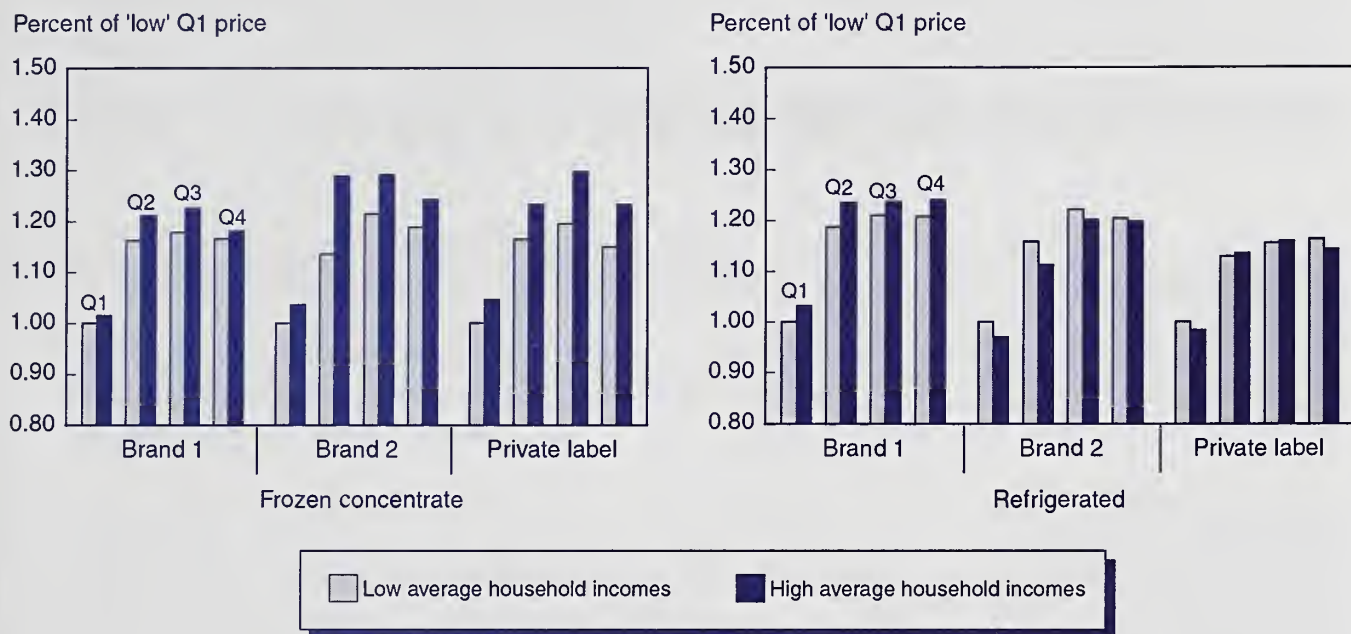
chains controlled large shares of the area grocery market. Lower prices were also found in markets where large grocery wholesalers and/or integrated retailers dominate market sales. Also observed from this data was an apparent relationship between private label presence in a market and lower prices for leading national orange juice brands. Related to this, it was found that price increases were more pronounced in areas with strong private label competition, and this appeared to reflect smaller cost-to-price margins in these markets. These smaller margins mean there is less of a buffer for retailers or brand producers to hold prices steady when grower prices increased with the freeze-induced commodity shortage. While prices appeared to be higher in markets where average household incomes were high, these findings were not as pronounced. Taken together, the data show how consolidation along the orange juice supply chain, such as has occurred over much of the past decade, could have contributed to lower market prices. Also apparent in this data are some indication that diminished competition, particularly diminished private label competition, leads to higher market prices.

The findings presented here are largely anecdotal evidence of market pricing behavior. For example, it is very likely that markets with a high concentration of large grocery chains also have similar concentrations of wholesalers and a strong private label presence. Another possibility is that GMAs where wholesale or retail concentration is less advanced may happen to be primarily in areas that are a long shipping distance away from the Florida market. In similar analysis to that presented here (omitted from this

Figure B-4

Quarterly market prices of orange juice for period ending November 2, 1990

Grouped by average household income within market area



report), it was found that retail prices, particularly in the refrigerated segment, were substantially higher in markets further away from the Florida market. This is most likely explained by transportation costs and this could be what is showing up in the market groupings for low retail, wholesale, or private label concentration, in which case those findings may be misleading. Similar concerns can be raised about our analysis of household incomes.

To overcome this uncertainty, the evidence of market pricing behavior discussed in this report was examined by use of regression analysis. Although the details of this analysis are not presented, the results did indicate that many significant statistical relationships of the type suggested here were found to exist. These findings show, for example, that after controlling for the other factors discussed in this paper (and others not discussed), there is still a strong statistical probability that high private label market shares in the refrigerated orange juice segment make it likely that national brand refrigerated orange juice prices were lower in these areas than elsewhere. Retail concentration was found to have the same effect, although not quite to the same extent as was the private label effect. A less compelling result for the effects of household income on market prices was found using regression analysis. While higher market area household incomes appeared to lead to higher retail orange juice prices, the statistical probability that income and prices are related in this way was found to be rather low.

Since the period of this analysis, there has been more widespread consolidation of grocery retail and wholesale opera-

tions, and the private label/store-brand products have also flourished. Consumer preferences have substantially shifted from frozen to refrigerated juice varieties, and with this shift, brand market shares have also changed. So, while it appears that the cost-reducing forces have outweighed the anti-competitive forces as consolidation has advanced in the orange juice supply chain, continuing consolidation in the orange juice marketing system has not diminished the potential that anti-competitive forces may push up retail orange juice prices in the future.

References

- Brown, M., T. Spreen, and R. Goodrich. 2000. "Trends in the NFC Orange Juice Segment," *Citrus Industry*. January.
- Connor, J.M. 1997. "Concentration and Mergers in U.S. Wholesale Grocery Markets," *Staff Paper 97-09*, Dept. of Agricultural Economics, Purdue University. June.
- Hardy, N. 1997. "How the Brands Market Juice," *Citrus Industry*. July.
- Private Label Manufacturers Association. 2000. *PLMA's 2000 Private Label Yearbook: A Statistical Guide to Today's Store Brands*.
- Metro Market Studies. 1991. *1991 Grocery Distribution Analysis and Guide*.
website: www.metromarketstudies.com/.

Spreen, T.H., and W. Fernandes, Jr. 2000. "Consolidation in the Florida Citrus Processing Industry," *Citrus Industry*. October.

U.S. Department of Agriculture, Economic Research Service. 2000a. *Fruit and Tree Nuts, Situation and Outlook Report*. FTS-289. September.

U.S. Department of Agriculture, Economic Research Service. 2000b. *Fruit and Tree Nuts, Situation and Outlook Yearbook*. FTS-290. October.

U.S. Department of Agriculture, National Agricultural Statistics Service. 1999. *1997 Census of Agriculture*. AC97-A-9. March.

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